NAVY CIVIL ENGINEER

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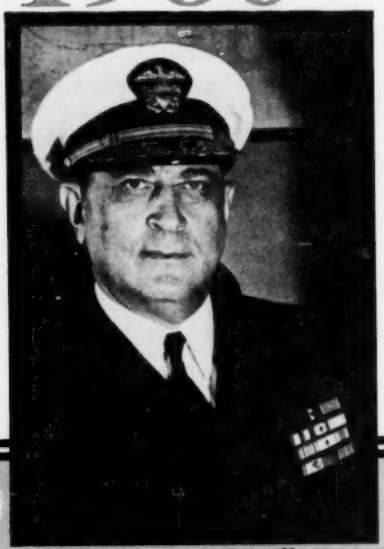
Military Readiness - Summer 1978



Adm. Ben Moreell
1892-1978

This issue of *The Navy Civil Engineer* reflects the current military readiness of the Naval Construction Force (Seabees) and the Naval Facilities Engineering Command, and is dedicated to the memory of Admiral Ben Moreell, CEC, USN (See pages 27-29).

Admiral Moreell's foresight led to the establishment of the Seabees during World War II and as Chief of the Bureau of Yards and Docks, forerunner of the present Naval Facilities Engineering Command, he obtained command responsibility for the Civil Engineer Corps which enabled the Seabees and the Corps to become an effective operating naval force.

Military readiness, as seen today on these pages, is a direct result of Admiral Moreell's leadership.

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AIR RESPONSE to urgent conditions is tested by NMCB-133 during recent exercises at the Construction Battalion Center, Gulfport, Miss. Details are found on page 22.

MANY QUOTES are attributed to Abraham Lincoln. Professor-Emeritus Ted Murphy of the Naval School, Civil Engineer Corps Officers expands on a Lincoln theme on page 11.

SUB MARINE service of the Seabees, the Underwater Construction Teams (UCT), has completed assignments in both the Atlantic and Pacific Oceans. See pages 20, 23 and 26.

A major part of NAVFAC's mission is Military Readiness, an all encompassing term relating to support of our Seabees, both active and reserve. NAVFAC is responsible for the logistic support of the Seabees, and is the focal point for everything pertaining to them.

In his 'second hat' as Chief of Civil Engineers the Commander, Naval Facilities Engineering Command, monitors the entire *"Seabee System"* and is the principal advisor to the Chief of Naval Operations (CNO) for all Seabee matters, including policy, planning and programming as they affect people, equipment and material. This involves us in everything from planning how we will put construction battalions in the field during war, to specifying, during peacetime, how an individual Seabee will wear his green uniform.

We refer to the term *"Seabee System"* because it is important to understand that the role we play is *total* in every sense—from overseas contingency planning and time-phased construction, to advanced base functional components and to the prepositioned war reserve material stocks (PWRMS) required for the outfitting of all our forces.

Each is as much a part of our daily concern as is the organization, training and outfitting of our active and reserve Seabee forces.

The process of military readiness begins with planning. Mobilization mission requirements established by the Joint Chiefs of Staff or the Chief of Naval Operations must be translated into specific force requirements. The major instrument used in planning for support of the Naval Construction Force is the advanced base functional component system. ABFC's are pre-planned, pre-engineered listings of facilities, equipment, material and personnel required to perform specific functions at an advanced base. As the designated Navy-wide systems engineer, NAVFAC coordinates or accomplishes the design, standardization and modernization of components and their assemblies, and the development of allowance lists and planning guides.

The eight active and seventeen Reserve Mobile Construction Battalions are our principal means of providing a construction capability to rapidly meet contingency requirements. Our battalions are mobile, self-sustaining combat support units. However, they cannot do their job if construction equipment and material is not provided to the theater of operations. To assure a rapid availability, much of the equipment and material needed for specific ABFCs is procured and stored as prepositioned war reserve material stock at the Construction Battalion Centers.

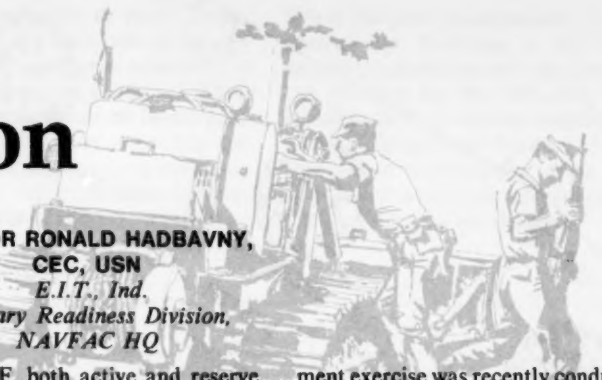
Key to our entire *"Seabee System"* is the Construction Battalion Center. This is where we provide the Seabee with his home, where he receives practically all of his training, and his battalion receives all its logistic support.

CBC's have broader support missions than what is seen daily by our battalions. As Navy stock points, the Centers are the primary source of material support to the Naval Construction Force for peacetime fleet projects. During mobilization, the CBCs are equipped to completely outfit and mount-out the active and Reserve Battalions with their full suit of equipment.

NAVFAC's military readiness role involves the total system of planning, material, and logistic support behind the Seabee in the field. The following articles discuss several components of this system, and serve to introduce the reader to NAVFAC's military readiness job. □

By CAPT. J. C. RICKELS, CEC, USN
P. E., La.
Deputy Commander for
Military Readiness, NAVFAC HQ

Naval Construction Force



By LCDR RONALD HADBAVNY, CEC, USN
E.I.T., Ind.
Military Readiness Division, NAVFAC HQ
● Alexandria, Va.

In November 1975, the Assistant Secretary of Defense for Installation and Logistics (ASD I&L) requested the Joint Chiefs of Staff (JCS) to conduct a study of the engineering requirements of all the services to support a projected "worst case" war scenario. This study was called the Joint Contingency Construction Requirements Study (JCCRS) and was approved by the JCS on 26 April 1977.

As a result of the study, the services can now more accurately estimate the manpower requirement and the types and amounts of construction expected. With this information, we are now able to evaluate the current posture of the Naval Construction Force (NCF) against projected wartime requirements. Since the initial study did not address all requirements, due to some hardware limitations, a follow-up study (JCCRS Phase II) has been directed and is currently in progress. The projected completed date for this phase is March 1979. The basis for the entire study (both Phase I and II) was the various OPLANS prepared under the Joint Operations Planning System (JOPS) that is more fully discussed on page 6.

As a result of the original ASD(I&L) tasking and concurrently with JCCRS Phase I, NAVFAC directed that a Mobilization Study Group be formed to evaluate the Military Readiness of the NCF. This group is composed of representatives from NAVFAC, CBPAC, CBLANT, 31NCR, 20NCR, CESO, CEL and the three CBC's.

At first, the study was limited to only the active side of the NCF. As the group became more involved with the study, it became obvious that the total NCF, both active and reserve, must be involved and, in October 1977, the RNCF provided representation to the group.

The most recent meeting of the Mobilization Study Group took place in May. The keynote of the session was to more clearly define the interrelationship of the numerous problem statements and to produce a current Master Plan that consolidates these statements into a more cohesive entity.

Significant results of the Study Group include the following:

- Mobilization plans based upon the JCCRS have been developed for the active NMCB's and the three CBC's.
- The NCF deployment concept has been changed to provide greater flexibility in the utilization of airlift capabilities. This was accomplished by dividing the battalions table of allowance (TOA) into three basic modules: (1) air detachment - 89 men/10% of battalion TOA; (2) air echelon - 737 men/55% of battalion TOA (includes air detachment); and (3) sea echelon - 25 men/45% of battalion TOA.
- Mobilization plans for the RNCF are being developed.
- The reserve augment units for the CBC's and homeported regiments have developed working mobilization plans for each of their units.
- The equipment utilized by the RNMCB's at their permanent drill sites is being reconfigured into an air detachment.
- Both CBC Gulfport and CBC Port Hueneme have packed-up the new "lean & mean" air detachment and have conducted minimum simulation mount-out exercises.
- An air echelon minus air detachment exercise was recently conducted in Gulfport and load plans were developed.

In addition to the Mobilization Study Group the Civil Engineering Laboratory, (CEL) with NAVFAC's Assistant Commander For Research and Development has been charged to develop new systems for the NCF that will *"double the output with half the assets in half the time."* This is obviously a challenge but typical of the problems we face in meeting the NCF requirements of the future.

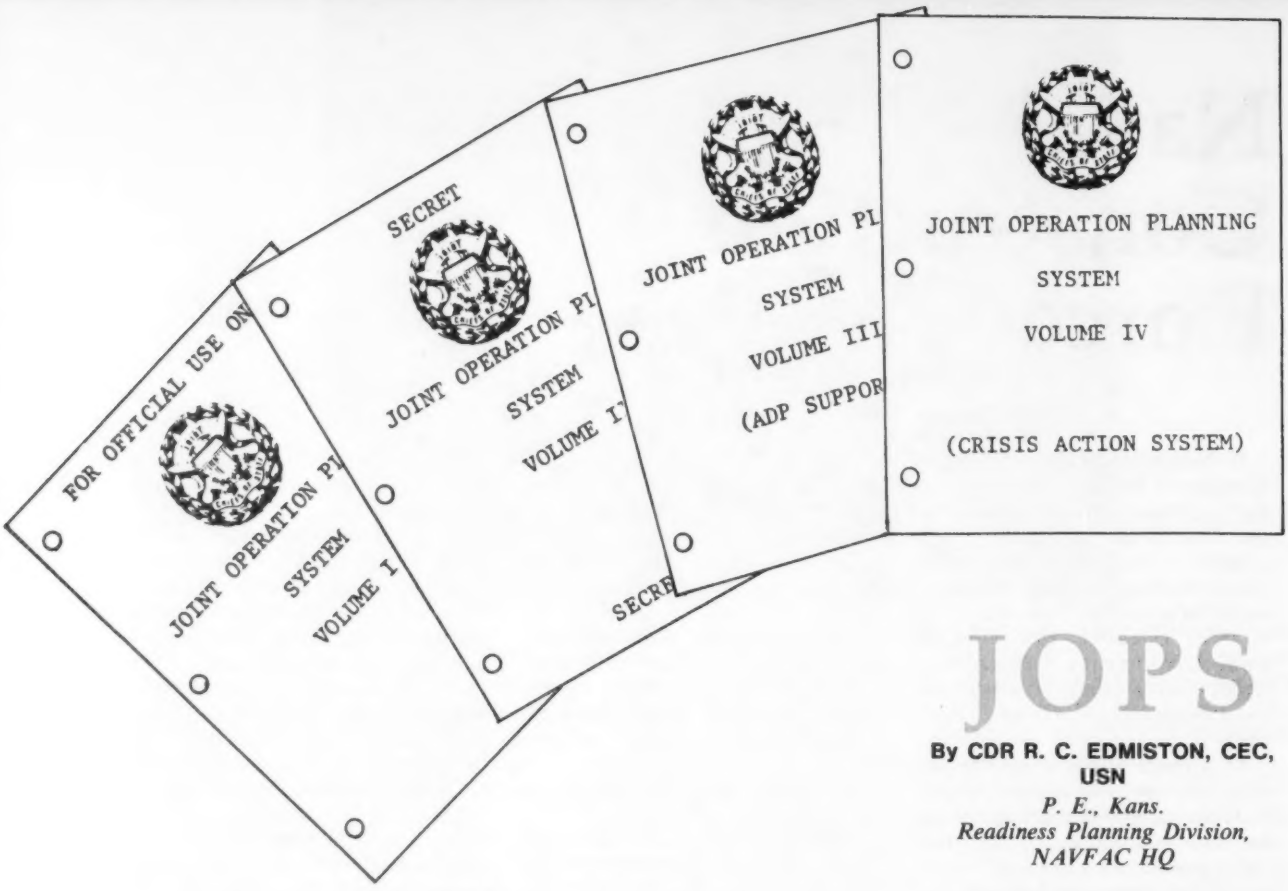
The Marine Corps has also initiated a study to determine the total construction requirements to support a Marine Amphibious Force (MAF) in an Amphibious Operating Area (AOA). The objectives of this study are:

- Define total engineering and construction requirements.
- Determine level and scope of Marine engineer involvement.
- Determine means to meet requirements beyond Marine capability or mission.
- Develop alternatives to satisfy shortages.

The Navy's interest in the study lies primarily with that objective of developing the amount and type of assistance required to augment the existing Marine engineering capability within the MAF. It is presently anticipated that the results of this study will be available in mid-1979.

Our capability to mobilize, mount-out and deploy the total NCF in time to satisfy the requirements of the various area commanders is dependent upon sustaining the dynamic effort now in progress.

Readiness is the key; can we meet the challenge? □



JOPS

By CDR R. C. EDMISTON, CEC, USN
P. E., Kans.
Readiness Planning Division, NAVFAC HQ

● Alexandria, Va.

JOPS — what in the world does it stand for — and why should you as a Civil Engineer Corps officer or Navy civilian employee even care?

Certainly, it's not a term you encounter every day in the public works or contracts office. However, in this rapidly changing world, these letters could well have an important effect on your future life.

The acronym JOPS stands for: *Joint Operation Planning System.* JOPS defines the standard formats, procedures, and the ADP software which are used today by the unified and specified commanders to prepare operation plans (OPLANS).

Back in the 1960s each commander developed his own OPLAN format and procedures. Not only was it difficult to interpret and review the various OPLANS in different formats; without the use of standardized computer programs it was impossible to test the feasibility of the plans and to determine if the plans could be supported logistically. It was also practically impossible to determine the effect of executing various plans simultaneously. To correct this situation, JOPS was developed under the direction of the Joint Chiefs of Staff (JCS).

The description of JOPS is contained in four JOPS volumes: Vol I — specifies the OPLAN format and annexes to the OPLAN; Vol II — provides guidance for preparation of annexes specified in Vol I; Vol III — establishes the ADP software systems to support joint operation planning and Vol IV — crisis action system — contains guidance and procedures for joint planning in emergencies, when there is not time to follow the normal procedures.

The heart of the system is in JOPS III, the ADP software. The software consists of two basic packages: the standard application programs, and the Standard Data Files.

These programs and files are maintained by JCS through service managers. The files and programs are to be updated quarterly. This means all commands use the same planning data. Using the computer's almost unlimited ability to store and manipulate data, the force planner can develop and test various plans to determine which best meets his requirements.

As the force planner begins to build the force list of combat units, computer data files portray the movement data associated with each type unit such as authorized wartime strength, number of personnel requiring non-organic transportation, types of cargo which must move with the unit, and the weight and cube of the cargo. The cargo is further described as to the amount which can move by air and the amount which must move by sea.

As combat support and combat service support units are added, the computer builds a file, called the time phased force deployment data file. Movement requirements are generated to include replacement personnel, resupply of equipment, materials, ammunition, food, etc., and a supply buildup to support the opera-

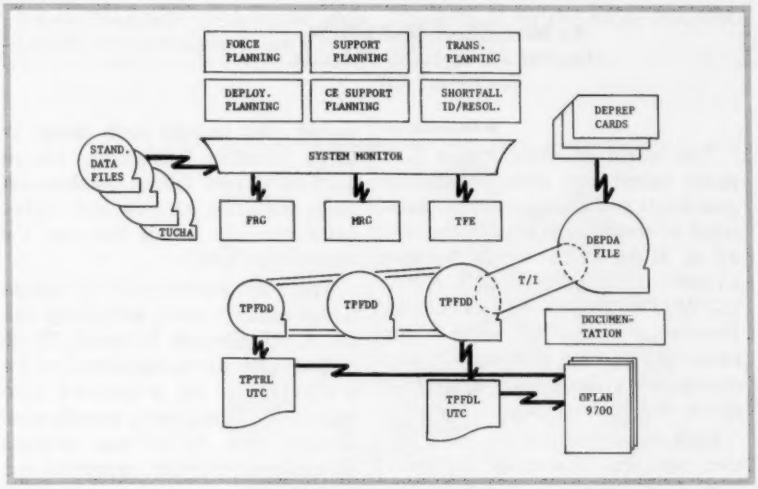
tion for the expected duration.

Using various transportation assets files plus the transportation feasibility estimator program, the planner can determine if he has sufficient planes and ships to move everything which needs to move each day. If not, the computer will aid him in revising the plan until he can move everything or in estimating the additional transportation assets needed to carry out the plan. When a proposed solution is reached to the transportation problem, it is presented to a worldwide plan development conference attended by the supporting commanders, component commanders, and the transportation operating agencies. If all are in agreement that they can support the plan, a final time phased transportation requirements list (TPTRL) is printed. The TPTRL represents the total movement requirements for the OPLAN.

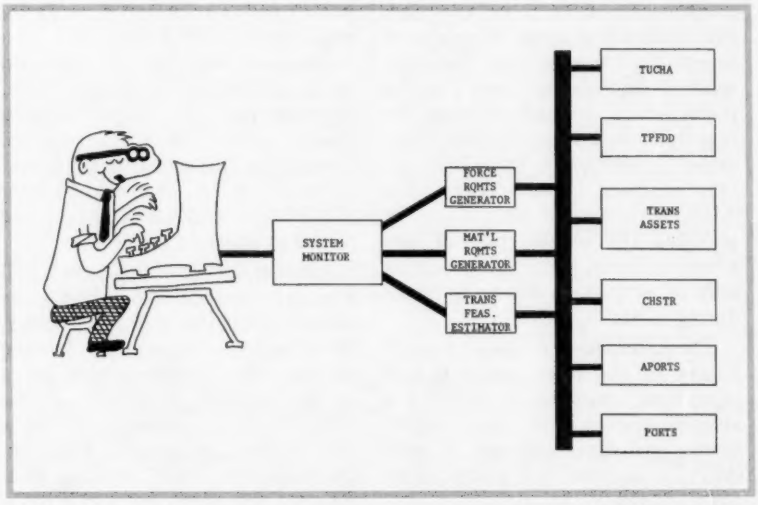
In a short discussion it is not possible to describe the planning process in detail. Suffice it to say that with JOPS, the military planners can do much more detailed and accurate planning and the services and JCS can perform better analysis and reviews than was ever possible before. Work is continuing to improve the system, and to allow rapid, accurate transmission of computer data around the world between the various command headquarters, the services and JCS. JOPS is now in use, and it is incumbent on anyone involved in operation planning to become familiar with the system.

The portion of JOPS which is of particular interest to CEC Officers and facility engineer personnel is the Civil Engineering Support Plan (CESP). It is this module which calculates and displays the facility construction requirements at each location to support the OPLAN. It enables the planner to determine the number of engineer forces (Seabees) he needs at each location, the day they need to arrive, and types of facilities to be constructed and/or repaired. The planner can then enter these engineer forces into the plan and check to see if he has sufficient transportation assets available to move them.

He may find, for example, that he has only enough planes in the early days of a scenario to move an air detachment of a battalion. Or he may find he has no planes available to move engineer equipment. Then another solution must be found, such as pre-positioning of materials and equipment, or determining some way to avoid the requirement for facilities construction/repair until the engineers can eventually arrive. When the plan is completed, it will portray the facilities to be constructed/repaired at each geographical location in the OPLAN, the schedule for their desired completion, and the engineer forces to be deployed to each location. From this and other available information, detailed planning can proceed. □



Schematic illustrating the plan development process utilizing JOPS III automatic data processing support.



JOPS utilizes the tremendous capability of the computer to store data and manipulate figures to assist planners develop operation plans.

WAR RESERVE STOCKS

By MILLICENT MARAVICH
Material Management Division,
NAVFAC HQ

● Alexandria, Va.

The world of mobilization is a pretty esoteric one, probably because practically everything about it is classified information. Added to that are all of those catch words bandied about: *CYCLONE, HURRICANE/TYPHOON* and *STORM*. Esoteric or not, mobilization is our business and, even if it weren't, any concerned citizen should wonder about mobilization plans.

How one segment of the mobilization scenario--*material (pre-positioned material)*--is added to the entire puzzle is revealed by this article.

The material requirements for mobilization are stated in a variety of ways: in *advanced base functional components (ABFCs)*, on allowance lists or simply in terms of months of support for a specific item. The statement of requirements most familiar is the ABFC, probably because the Naval Facilities Engineering Command (NAVFAC) is the ABFC system engineer for the Navy. The ABFC system is the Navy's way for planning the construction of new advanced bases, augmenting existing ones or supporting deploying forces during a contingency.

The ABFC itself is merely a paper listing of the men, material and equipment required to perform a specific mission. The development, design and documentation of each ABFC is assigned to a specific command, based on the intended technical function of the ABFC and the relation of this function to the technical responsibility of the command. A command so designated is called the dominant command. ABFCs are varied, and include such things as cargo handling battalions, assault craft units, tank farms, beachmaster units, hospitals, chapels and seabee battalions (the mobile kind and the amphibious kind).

There also exists in the aforementioned esoteric world something called *CNO Special Projects*. These projects provide the authorization for material to be acquired and maintained to support a specific contingency plan. All of these projects are assigned priorities, categories and classifications. Some of these Projects contain ABFCs, some do not. But they all contain material--material to be pre-positioned in order to reduce reaction time in the event of mobilization; hence the terms *pre-positioned war reserve material requirement* (PWRMR) and *pre-positioned war reserve material stock* (PWRMS). Once an ABFC becomes part of a CNO Special Project, a PWRMR for the material is established. If procurement money is provided for the *requirement* (PWRMR), material is bought and placed in *stock* (PWRMS).

Assume that in a fictitious CNO Special Project *ZEPHYR*, the project with the highest priority, there exists a requirement (among various other requirements) for a certain number of ABFC P-25s. ABFC P-25 is another name for a naval mobile construction battalion. On paper, this ABFC contains men, material and equipment and it has a specific mission to perform in Project *ZEPHYR*. Because this particular ABFC is a Seabee Battalion, NAVFAC is the dominant command and, as such, it has determined what the material requirements are and, through the Civil Engineer Support Office (CESO) of Construction Battalion Center (CBC) Port Hueneme, California, has advised all of the other material managers of their contribution. It is also NAVFAC's responsibility (again through CESO), as the inventory manager of 2C Cog material (Civil Engineering Support Equipment and Civil Engineering End Items), to budget, fund, procure, stock and maintain this 2C material at its CBCs in PWRMS in support of these P-25s.

All of the other material managers must also budget, fund, procure and position their material at various stocking activities in the continental United States (including CBCs). The Naval Supply Systems Command, as the Navy retail manager of Defense Logistics Agency material, contributes the majority of items (but not the dollar value) comprising a P-25. This material in PWRMS is not stored as an ABFC unit. Instead, it is placed in stock along with similar material and rotated for peacetime use. The stock level, however, cannot be reduced below the PWRMR level. In the event of a mobilization or other contingency, all of the reserved material is pulled from stock and shipped from one or various locations to meet the men (Seabees in this instance) at the designated location.

At this point, NAVFAC, as the dominant command, must fund material deficiencies and obtain the material in the required time. If everything works as theorized, the material will be acquired and shipped to support the contingency.

Project *ZEPHYR* isn't the only

CNO Special Project. There are others, e.g., Projects *TRADE WIND, SOUTH WIND* and *WIND BLOWN*, etc., each with its own priority. Some CNO Special Projects support the Marines, some exist to build Navy advanced bases, others for replenishing combat stores ships. Together these CNO Special Projects, and others, constitute the Navy's PWRMR Program.

If Projects *ZEPHYR, TRADE WIND* and *SOUTH WIND* are assigned Priorities 1, 2 and 3, respectively, and each has a number of P-25s within the Project and there is not enough money to acquire all of the material, then available material is allocated in accordance with the priority of the project.

There cannot be PWRM*S* without a corresponding PWRM*R* but there is an uncomfortable amount of PWRM*R* without PWRM*S*. There is even PWRMR which would intentionally not be procured even if funds were available. Items likely to deteriorate, become obsolete or be easily available are categorized as deferred procurement and are not acquired until actual mobilization.

This brief description of the PWRMS program has deliberately omitted some of the more mind-boggling details of PWRMS management. However, PWRMS is one of the key building blocks of Seabee readiness, and should be generally understood by the entire NAVFAC community. □

Planning and mobilization . . . where the future is NOW!

By LEONARD M. SEIGEL
CBC Command Management Division, NAVFACHQ

● Alexandria, Va.

The Naval Construction Battalion Centers' (CBCs) primary mission is to provide logistical support to the Naval Construction Force (NCF). Since the early days of World War II, it has been assumed that the CBCs can do *whatever* is needed — *whenever* it is required. This includes a gamut of services — training, berthing, storing, shipping, receiving and administration.

One of the most important posts in the CBC support mission is the Planning and Mobilization Office, which is staffed with experts in mobilization readiness planning, logistics, facilities planning, disaster recovery and real estate utilization. The planning and mobilization officer (PMO), who is a department head, reports directly to the CBC commanding officer.

Normally, the CBC Planning and Mobilization Office has several functions which have direct bearing on the Center's response during a mobilization or contingency operation. These programs include the maintenance and updating of the basic facilities requirements list (BFRL); preparing studies for the development of new and/or replacement facilities vital to the Center; and documenting those projects. Further, the PMO develops the staging and storage requirements required to support the deployed NCF, and prepares Logistic Support and Mobilization Plans (LSMP) which serve as the master data base of all mobilization contingency operations performed by a CBC.

In recent years the LSMP has received increased attention because contingency operation methods are changing. New construction techniques and changes in civil engineer support equipment (CESE), coupled with the increased dependence on advance base functional components (ABFCs), have placed additional requirements on the CBCs. For example, loading configurations and cargo handling operations have been modified to accommodate the new container ships which transport mobilization stocks. Staging requirements for this equipment as well as material scheduled for airlift are being changed to meet the urgency of NCF mount-out operations.

It is the total NCF "pipeline" operation that demands detailed CBC operations planning. The planning of World War II, Korea and Southeast Asia were different, in that most mobilization operations were subjected to a slow, steady buildup. Consequently, our Centers then had the necessary lead time to support global Seabee operations. Tomorrow, the situation may be entirely different, with Seabee response practically immediate. Consequently, mobilization planning must insure that men and materials can move in unison within a period as short as forty-eight hours! *(continued next page)*

Planning . . .

(continued from preceding page)

The PMOs have developed processes to meet new problems generated by the changing LSMP requirements. The analysis, in brief, includes:

- Modification of LSMP parameters
- CBC mobilization requirements including augmentation by Naval Reserve forces
- Advance Base Functional Component assembly
- CBC capacity
- Memoranda of Agreement with local port authorities
- Stevedoring requirements
- Defense access needs
- Communications
- Prepacking requirements
- Review of "outside" requirements
- Resupply during the "steady state" of mobilization
- Port maintenance programs
- Prepositioning requirements

Under the guidance of NAVFAC's Deputy Commander for Military Readiness, the PMOs have been refining their individual analyses to develop a totally integrated set of CBC mobilization plans for NCF support. Upon completion of this step, each CBC will play a mutually supportive role on Mobilization Day. □

It's a natural Air conditioning from seawater

● Port Hueneme, Calif.

Seawater may be a future source of significant savings in the Navy's effort to conserve energy.

Studies reveal that 70-80% of the electrical energy used for air conditioning can be saved, at suitable locations, by using natural cold water to directly air condition buildings.

The Civil Engineering Laboratory (CEL), Port Hueneme, Calif., recently completed a preliminary design of a seawater cooling system for a naval facility located at Winter Harbor, Maine. The direct seawater cooling concept is one possible alternative to conventional vapor compression air conditioning at the site. The project is sponsored by the Naval Material Command (NMC).

The Maine location was chosen because it is less than 780m (2,600 ft) from sufficiently cold water in the Atlantic Ocean and the facility requires year-round air conditioning.

The laboratory will complete three related surveys: measuring water temperatures in Winter Harbor; which are expected to be less than 10°C (50°F) throughout the year at a depth of 14m (50 ft), one quarter mile offshore; conducting land and seafloor surveys; and studying the biological impact (possible fouling of the pipes by marine organisms) on the air conditioning system.

In the conventional air conditioning system, fresh water is chilled by a compressor system, then run through a series of coils in front of a fan which cools and dehumidifies the air. The warmed water is cycled for rechilling.

John B. Ciani, CEL project engineer, said the seawater cooling concept being developed does not require a compressor system because ocean water is naturally cold. Water temperatures ranging from 7° to 12°C (45°-55°F) are acceptable for the direct seawater system. Energy needed to pump water from the ocean is not nearly as great as the energy required to chill fresh water for a conventional air conditioning system.

The proposed prototype system is designed to provide 1064L (280 gallons) of water per minute from a submerged offshore intake, through a heat exchanger, and to return the heated water to the bay. It was determined that this system would not harm the environment.

Several air conditioning design options are available for the Winter Harbor project, depending on maximum seawater temperature. The seawater cooling system will include provisions for fouling control. One possible method of fouling prevention is mechanical filtration of organisms larger than 50 microns and ultraviolet purification for smaller organisms.

Although the CEL project is a comparatively small energy conservation effort, the concept if applied on a larger scale could prove significantly important. It is estimated that by converting to sea or lake water air conditioning systems at waterfront naval facilities whenever possible, instead of using conventional air conditioning units, the Navy could save approximately $3 million a year in operating costs.

CEL also will evaluate the feasibility of such cooling plants at 10 other select naval facilities located near the ocean or inland lakes. □

A. Lincoln

'Nearly all men can stand adversity, but if you want to test a man's character, give him power.'

By T. C. MURPHY
Professor Emeritus, CECOS

Authority is power and the possession of it does strange things to some men.

Authority, its specification and its distribution, is absolutely essential to concerted effort and achievement in organizations. But in concept, authority is neutral—that is, it can be inappropriately or prudently specified; and the structure of its distribution can be awkward or graceful. Authority can be used, abused, misused or moribund. Its possessor can become dictator, frustrator, or facilitator.

Whatever authority in action becomes depends upon the man who holds it, what he does or tries to do with it, and the manner of his doing so.

The natural reaction of subordinates to him will determine the organization's place on an achievement scale.

So it may be useful to consider, first, not leader attributes and behavior, but *follower* perceptions of him as a man and as a powerholder. Then, based upon these perceptions and reactions we will be able to make some judgements about him and the use he makes of power.

This may be instructive to junior officers and petty officers being given, for the first time, the opportunity to exercise authority over other men. It is possible too, that it will be of no benefit to some.

For more than a century, and intensified since the Korean war, U.S. military forces have been subjected to a multitude of special courses, seminars, training and retraining on the subject of leadership theory and application, some of it substantive, some *not* in the light of the experiences described. The value of that effort (i.e. leadership training) comes into question. Until some reliable measurements are made, i.e., leadership effectiveness, 1978 vis-a-vis, 1940, we cannot say with any certainty whether it has been profitable.

For all we *know* the distribution of 'good' vs. 'bad' leaders in the military service (and elsewhere) today is no better than it was in 1950, or in 1910, for that matter. This is not to say that the military environment and its institutions have not changed. Of course, they have.

But has the ratio— 'good' leaders vs. 'bad'— changed? Or are we still dragging an anchor of the same size, weight and character?

Few people will disagree with the proposition that men tend to work best, or follow, men they respect and trust. This trust and respect is not symbolic and it has little to do with authority, position, rank or rate. It is a product of the quality of human interaction.

Respect and trust are simple enough words, easily understood and commonly used, but they are each capstones to complexes of interactive impressions, feelings, responses. We learn to respect a man not simply, directly or immediately; but only when we *know* him. It results from numerous exchanges, impressions, observations; problems encountered and overcome (or not) — all stored, easily recalled—all constituting the foundation-catalogue supporting an eventual private judgement: "I respect him", "He can be trusted", or "This S.O.B. cannot be trusted."

Although some military people would have it otherwise it is generally accepted that respect will never be given gratuitously. It must be *earned.*

In 1975 I asked sixty E6-7's to reflect (for a week) upon all the bosses they had ever worked for, then to select the worst and write a description of that individual's activities. The average time in service of E6's is 13.5 years, and for E-7's, 16.6 years. Presuming they had a different boss each year they would each have experienced roughly 14-17 bosses, quite enough to make a respectable sample. Further I wanted the description to be explicit in terms of what the individual did and said in the daily work environment and how he did and said it. In other words I wanted concrete examples, not adjectives and adverbs.

Sixty Seabees can think of many ways—some quite colorful—of describing their worst boss. I have arbitrarily gathered their statements into clusters of like or related sentiments within two dimensions: human and technical. One can easily argue for explicating the responses in a different way, particularly if the results are found to be disagreeable. Some might argue that this survey is unscientific and that, of course, is true. Those who are so

Lincoln said . . .

(continued from preceding page)

inclined will find in the stacks of any large research library tons of scientific studies in group dynamics, human interaction, leadership, etc. The studies were conducted by reputable scientists and many were financed by Office of Naval Research. I have read many of them and they are instructive, but they are not directly useful to military personnel. Only a few ever find their way into the literature of military institutions and the living military environment.

The 'worst-boss' characteristic which was mentioned most was: "demonstrated distrust and disrespect for subordinates."

This was described in different ways:

- "He did not get the help he needed from his senior men because he didn't trust us. *(A battalion engineering officer)*
- "He seldom if ever had any compliments for management, peers, or subordinates and the most used words in his vocabulary were 'I did'. He would never listen to anything that was suggested by his subordinates as he 'knew so much more' than they did and was always defensive to any help or constructive criticism. It finally got so bad that I took the problem up with the next higher supervisor. The crew had become like a pack of wolves towards each other as he had started playing one person against another and got everyone so emotionally upset that no productive work was being accomplished." (Rank/rate not specified)
- "I took the liberty of explaining my views to the boss and he literally exploded at my suggestions. The yelling and carrying on in front of my subordinates was totally unnecessary. Finally he grabbed his collar device, poking it at me, saying 'I am a Chief Petty Officer and you'll do *what* I say *when* I say it!" *(Obviously a CPO)*
- "An individual I worked for did not use the petty officers as a managerial tool. He did not trust but one of his CPO's out of the five he had. And this was based solely on the fact that this one has completed an associate degree and was therefore the most intelligent of the group. He made this statement to all five CPOs at company OPS meeting. And to compound this statement, it was made after only two weeks in the command." *(A company commander)*
- "He would use his crow to put you in your place." *(E6)*
- "There is a difference between ignorance and stupidity. Ignorance in which there is no harm, is not knowing—stupidity, in which there is great harm, is remaining ignorant. This man's total lack of demonstration of knowledge was evident down to the lowest-rated man.... his indecision was clearly demonstrated by lack of positive answers or actions upon questions or problems.... The refusal to utilize, seek, or accept the advice, experience and talent available to him was appalling." *(LTJG)*
- "Upon arrival in the states which was about 2 a.m. Sunday morning he abandoned his team and went on leave. He hadn't made any efforts in assuring that his men had lodging for the night. Some of the team's wives were there to meet them but no one could leave due to the fact that all our cargo had to be inspected by customs. He had taken the cargo manifest with him." *(OIC–Detachment)*

The next most-often mentioned cluster manifests not only a gross insensitivity but very bad manners.

- "He never spoke to a subordinate except on business.... never said 'Good morning' and I doubt if he ever knew what 'Thank you' meant." *(Officer)*
- "Never had anything decent to say in the morning" *(CPO)*
- "The only time he would speak to you was to chew you out" *(Civilian)*
- "He seemed to enjoy the suppression of professional growth or knowledge in subordinates in that they would have to come to him so that he could shine his all-knowing light of wisdom." *(Rank/Rate unspecified)*
- "He would go to the jobsite and belittle the crew leader in front of the crew, often take control of the crew from the crew leader." *(Rank/Rate unspecified)*
- "He had no leadership qualities at all. You could not talk to him about problems or anything, he just would not listen.... he never trusted anyone and was always loud and belligerent.... he never delegated authority.... never gave praise or well done.... if you made the smallest goof you always had a spectacular chewing-out in front of the

	Human Dimension	Times Mentioned
1.	Demonstrates no respect or concern for subordinates; distrusts subordinates, refuses to delegate; deaf to suggestions; keeps subordinates in dark.	29
2.	Never a "Good morning," "Thank you," or a smile; never credits others; never satisfied; reprimands publicly; abusive.	17
3.	Dishonest, couldn't be trusted; a backstabber, undercut delegates	12
4.	Big me-Little you; martinet; take-charge dictator, ego-tripper	11
5.	Drunk or hung-over/ a 'visitor' in club afternoons	11
6.	Bad-mouthing peers or seniors, or both	4
	Technical Dimension	
1.	Technically incompetent/ignorant/stupid	8
2.	Indecisive, inconsistent	8
3.	Coverup artist/gamesman politician/buck-passer	14

whole division. Overall I would say he was the most rotten no-good bastard I ever worked for." *(CPO)*

The individual most often mentioned in the technical dimension is a familiar one—the gamesman or 'Politician'.

- "When things were going smooth he was the boss. When the chips were down he was either too busy to handle the situation or he'd delegate the authority to me." *(OIC-Detachment)*
- "My worst boss is a career Master Chief. He had been in the navy for 28 years when I went to work for him. He was the type that he would use anyone that could help him get ahead. When your usefulness was expended he would discard you.... he lied to me and I have no need for a liar."

Not surprisingly, complaints in the human dimension outnumbered those in the technical dimension by almost 3 to 1.

Most of the worst bosses scored in more than one cluster, and a few in practically all clusters, seeming literally to be basket-cases as far as their described leader-behavior is concerned. When one considers the strong possibility that the feelings of the describer were consensus feelings, the prospect of unit morale, motivation and productivity is gloomy indeed. To say nothing of the effect upon discipline retention rates, etc. To illustrate:

- "During the 18 months I worked for this man I began to dislike my job more each day and I know I slacked off and wasn't doing my job the way I should."

How much 'ransom' is paid—daily—in the form of work not done, poorly done, not done on time—because of the demotivating effects of such leaders?

Overall, an officer was identified (by rank, not name) by 24 of the respondents, a CPO (or other) by 20, while the rank or rate was not specified by the remainder. Among officers, more ensigns and LTJG's were selected probably because few petty officers report directly to higher ranks.

It is a matter of conventional wisdom among some military people that junior officers are somewhat inept as leaders and that is a natural result of their lack of experience. But how is it then, that CPOs were selected in numbers that exceed ensign selection by approximately 3 to 1? Certainly, CPOs are not inexperienced. So much for conventional wisdom.

This survey does not tell us what percentage of Officers or Petty Officers fall into the worst category. For this sample the *worsts* constitute about 7% of the bosses they have worked for; a low and comforting figure. But how many of their other bosses were *almost as bad?*

The experience of this sample seems to confirm the results of a comprehensive study of a number of organizations (including several military) by F. E. Fiedler, University of Illinois, *Leadership Experience and Leadership Performance—Another Hypothesis Shot to Hell.* That hypothesis was that leadership effectiveness could be equated with the length of leadership experience. As the title posits, the hypothesis was not confirmed. But it remains a well-kept secret in military literature.

The 'Worst Bosses' Were Identified As:

Officer		*Petty Officer*	
CDR	*1*	*MCPO*	*2*
LCDR	*1*	*SCPO*	*2*
LT	*2*	*CPO*	*13*
LTJG	*6*	*ICL*	*1*
Ensign	*2*	*Civilian*	*2*
**OIC-DET*	*5*	*Total*	*20*
Junior Officer	*4*		
Rank Unspecified	*8*		
**LDO*	*2*		
Total	*24*		

**Counted Elsewhere*

Rank/Rate not indicated 16

Most adults want to feel a sense of pride. Nothing satisfies that desire more fully than the conviction that he or she is a member of an organization where the boss sets high, realistic standards and demands that they be met in an environment where Human Dimensions are not sacrificed. Pride thus generated is the most powerful of motivating forces.

For whatever reason, the individuals described in this survey seem to feel free (or ignorant) of the strictures which ordinarily impose tacit rules of behavior upon Human Association in military organizations. Perhaps they have succumbed to the old canard "Leadership is not a popularity contest." But the disabilities these respondents found in their worst bosses have nothing to do, primarily, with popularity or unpopularity. Those selected as worst suffer crippling handicaps of insensitivity and immaturity.

They seem to be extraordinarily self-indulgent, self-righteous individuals, and to entertain bizarre notions of self and misconceptions of authority.

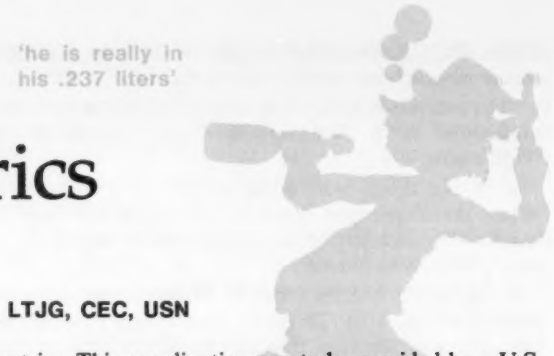
A final question arises: When an individual with such disabilities joins a command (and is given a piece of its authority) does his behavior persist because of the command's ignorance of it? Or indifference?

It would be nice if a recycling process for such bosses were available.

Or since so many people are being born-again these days will we soon learn of born-again leaders?

But maybe Lincoln was right. What if it is a matter of character?

In that case I guess nothing would help them. □



More about metrics

By J. A. McCONNELL, LTJG, CEC, USN

● Pittsburgh, Pa.

Pursuant to Public Law 90-472 (August 1968), the U.S. Department of Commerce conducted a broad inquiry and evaluation to determine the public sentiment towards metrication and to recommend subsequent courses of action.

The study, "A Metric America—A Decision Whose Time Has Come," concluded that eventually the United States will join the rest of the world in the use of the metric system as the predominant language of measurement. The study further concluded that it would be far better for the nation to move to metrics by plan rather than sustaining the piecemeal movement already underway.

This particular U.S. Metric Study was the third of its kind in our nation's history. In 1790 Congress, being assigned Constitutional responsibility to "fix the standards of weights and measures," directed then Secretary of State Thomas Jefferson to conduct a similar study. Jefferson strongly recommended the adoption of the metric system being used at that time in France. Had Congress accepted Jefferson's proposal the United States would have been one of the first nations to go metric instead of one of the last. However, the proposal was rejected and nothing more was done for several years. In 1817 Congress once again directed a metric study, this one conducted by John Quincy Adams. Adams took this task seriously and after four years of research issued a report in favor of metric changeover but prefaced by the following disclaimer:

"The power of the legislator is limited over the will and actions of his subjects. His conflict with them is desperate when he counteracts their settled habits, their established usages, their domestic and individual economy, their ignorance, their prejudices, and their wants: all of which is unavoidable in the attempt to change, or to originate, a totally new system of weights and measures."

Congress ignored Adams' report also, and no further steps were taken until, in 1866, the U.S. system of weights and measures was established by the Treasury Department without Congressional sanction.

The latest study, issued in 1971, served as the basis for the Metric Conversion Act of 1975. Initially meant to provide for a national program to make the international metric system the predominant but not exclusive system of measurement in the United States within ten years, the bill was reduced, for political reasons, to providing only the coordination of a *voluntary* conversion to metrics. This coordination was to be provided by a U.S. Metric Board, a 17-member panel appointed by the President in October, 1977. Feeling much of the pressure outlined by Adams nearly 157 years earlier the lawmakers on Capitol Hill have assumed a "neutral stance" on the issue of metrication, avoiding any clear commitment to the change-over at all. Their ambivalence is no mystery. According to a recent Gallup poll 74% of those questioned even remotely knew what the metric system was and 40% of these were opposed to the changeover.

Congress gave the U.S. Metric Board no enforcement authority and shrank from the proposed ten year deadline. Consequently the Metric Board has been reduced to a high-level panel of cheerleaders hoping to set a prometric course toward an uncertain destination. Realistically, the authority of the Metric Board may well have to be determined by the courts, which so often happens when an ambiguous law is written.

There is substantial credence to the argument favoring metric changeover:

SI allows ease in conversion from one unit to another. (In 1960 a standard system of measurement was revealed by the International General Conference of Weights and Measures. Known as the International System of Units, abbreviated SI (from its French name) in all languages, it provides a complete, coherent system.)

SI provides unification of measures of distance, mass, and volume.

SI provides standardization of manufactured products of different countries.

The conversion will enhance international technological transfer.

Ninety percent of the world currently uses or has plans to implement SI.

In addition, the Metric Conversion Act maintains that SI will: stimulate the economy; result in new jobs; improve international communications; and enhance the U.S. position in the world trade markets.

These advantages can best be realized by an orderly, responsible national changeover. It is clear that the greatest challenge to a successful transition is public education. Engineers stand not only to reap considerable benefits from a metric changeover but are also in a unique position of responsibility to act as leaders in promoting the positive aspects of SI through its technical application and to plan carefully in allowing the public to "ease" into metrics. □

'Clean Air' Legislation

By JOEL S. PREMACK
Environmental Quality Division, NAVFAC HQ

● Alexandria, Va.

The principle of federal sovereignty has traditionally excluded federal agencies from State and local procedural requirements. The new Clean Air Act Amendments of 1977 (PL 95-95) remove this exemption with respect to the control and abatement of air pollution. Numerous new substantive requirements have also been added.

In keeping with a 1976 Supreme Court decision, the Congress has added clear language to Section 118 of the Clean Air Act that waives federal sovereignty. Commanding officers of Naval activities (as well as all other agents and employees) must now assure compliance with all applicable state and local requirements, whether administrative or substantive.

The new amendments require that federal agencies now obtain state permits or variances in states where such documents are necessary; keep state and local records when required; provide air pollution control reports and other information when requested by state and local agencies; and allow state, interstate, and local air pollution control agency personnel access to federal facilities, in accordance with local procedures.

The new requirements for federal compliance with state and local administrative processes became effective on 7 August 1977. Sources currently operating (existing sources) without some form of permit to operate (permit to operate, emission license, source registration, or existing facility report) in states that require such "permits" are out of compliance with existing state/local administrative standards, and are therefore subject to immediate citation.

Similarly, sources under construction, or for which construction contracts have been let, are immediately required to obtain some form of permit to construct, which includes all necessary preconstruction review.

Within the Navy, major claimants will be responsible for obtaining permits and variances and coordinating these actions with the NAVFAC Engineering Field Divisions. The Chief of Naval Material (CNM) through NAVFAC and the Naval Environmental Protection Support Service (NEPSS) will assist major claimants to make needed changes in existing instructions and other documentation reflecting permit requirements and to maintain a Navy-wide list of permits/variances and a status of compliance with stipulated conditions.

The Department of Defense is identifying unique military activities that may be granted exemptions in the interest of national security. Pending resolution of a condition critical to national defense, it may be possible to obtain temporary relief from a particular state or local requirement.

The Secretary of the Navy has been advised to notify immediately the Assistant Secretary of Defense if he thinks compliance with state or local regulations and controls would impair national defense functions or would be impractical or inconsistent with proper security requirements. These cases would be considered for possible exemptions.

Actions to be taken by a state and EPA, as a result of the revisions to Section 118 are identified below.

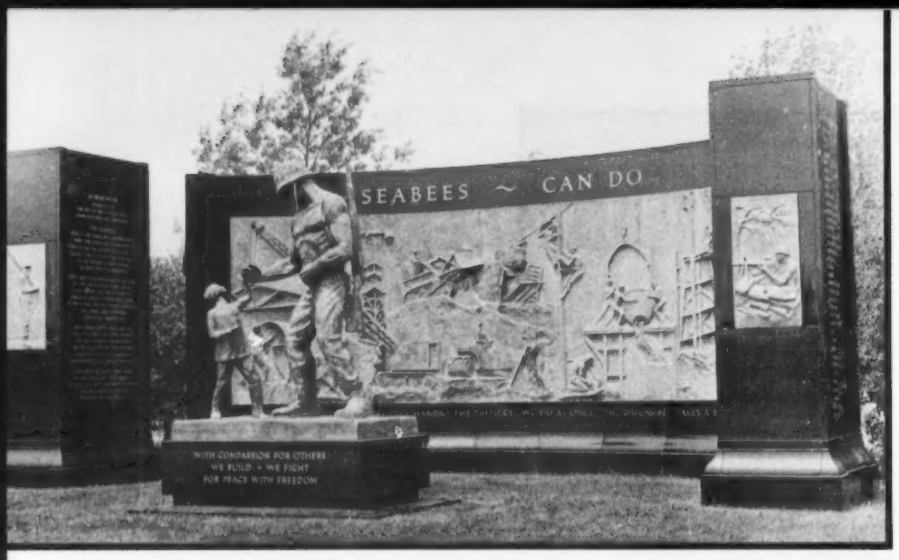
States are required to:

- Identify required levels of air quality in their portions of air quality control regions (AQCRs).
- Revise State Implementation Plans (SIPs) to carry out nonattainment and air quality maintenance programs, including an enforceable permit program.
- Require mandatory vehicle inspection and maintenance programs in cities unable to attain federal ambient air standards for automobile-related pollutants.
- Revise State Implementation Plans to prevent emissions from new and expanding air sources, resulting in significant deterioration of areas cleaner than federal ambient air quality standards require. Increases in total suspended particulate (TSP) and sulfur dioxide (SO_2) are allowed by the Act for three land classifications: pristine areas (class I), areas of moderate growth (class II), and areas of intensive growth (class III).
- Require stationary sources to pay permit fees.

The EPA is required to:

- Review and revise existing ambient standards, if necessary, by 31 December 1980.
- Set new standards, if necessary, for cadmium, arsenic, polycyclic organic matter, and radioactive substances.
- Set a three-hour nitrogen dioxide standard.
- Set design, equipment, or operational standards for hazardous emissions.
- Provide regulatory authority to protect stratosphere ozone layer.
- Allow state/local agencies to adopt and enforce indirect source review programs.

Subsequent information on the implementation of PL 95-95 may be obtained through the Environmental Engineering Branches of the Naval Facilities Engineering Command Field Divisions, or the Environmental Information Coordinator at the Navy Environmental Support Office (AV 360-4182 or commercial 805-982-4182). □



BY RADM WALTER M. ENGER, CEC, USN (RET)

Rear Admiral Walter M. Enger, who served as Commander, Naval Facilities Engineering Command and Chief of Civil Engineers from 1969 to 1973, was the guest speaker at the Third Annual Seabee Memorial Service held on March 4, 1978 in Arlington, Virginia.

A large crowd gathered before the superb memorial created by sculptor Felix de Weldon to honor fallen United States Navy Seabees and Civil Engineer Corps officers.

I'm sure that Rear Admiral Enger's words of tribute to all Seabees will be of special interest to the readers of The Navy Civil Engineer.

D. G. ISELIN
Commander
Naval Facilities Engineering
Command and
Chief of Civil Engineers

Admiral Ben Moreell, the distinguished founder of the Seabees, once wrote, "What a joy the Seabees are to all who have worked with them and who have loved them."

Time and time again this sentiment has been echoed by others who have had opportunity to watch the Seabees work their many miracles.

It is appropriate and satisfying to pause, on this the thirty-sixth anniversary of the founding of the Seabees, to recognize the accomplishments of those who have given so much of themselves in dedicated service to their country. Although we are saddened by the memory of those Seabees who are no longer with us, our spirits are lifted by vivid memories of the special skill and enthusiasm they brought to every task. Theirs is a heritage shared by all Seabees of yesterday, of today, and of tomorrow.

The accomplishments of the Seabees around the world, in times of war and in times of peace, are so far-reaching it is difficult to believe they have been with us for only 36 years. I have often been asked to explain how it was that the Seabees were able to burst upon the scene in World War II with instant esprit-de-corps, instant tradition and instant ability to accomplish construction miracles. This "Can Do" spirit of the Seabees, the builders of the Navy, was in fact a characteristic inherited from the construction industry, the builders of America. When their country called, the men of the construction industry responded promptly and cheerfully, bringing their enthusiasm, their customs and their skills intact, ready to meet any challenge.

The story of the Seabees is best told in the words engraved on the Seabee Memorial Monument before you:

"Born in the early days of World War II when the Nation was in dire peril, their mission was to build bases

The Two Seabee Memorials

for the combat forces, to defend those bases and to provide other support of whatever kind required.

"Organized and commanded by officers of the Civil Engineer Corps of the Navy, recruited largely from the building trades of organized labor, buttressed by the construction industry, The Seabees quickly proved their total competence."

High morale, expert skills, versatile ingenuity, strong devotion to duty and deep sympathy for the needy are hallmarks of their record. Their motto, "can do," symbolizes their traditions and their achievements.

"Generations of Seabees have added to the laurels of their forebears. In war and peace they have maintained their high repute as builders, fighters and humanitarians."

Those words composed by Admiral Moreell capture the great history and true spirit of the Seabees. Another distinguished Seabee, the world-renowned sculptor, Mr. Felix de Weldon, has just as surely captured their story and their spirit in the beautiful and inspiring Seabee Memorial Monument, the centerpiece of this memorial service. The powerful central figure, symbolic of all Seabees, is a moving tribute to their skill as builders, their preparedness as fighters and their concern for the welfare of others. The magnificent panorama in the background attests to the marvelous diversity of construction skills they bring to bear for the benefit of their fellow countrymen.

This monument is a truly impressive and fitting memorial to the Seabees. That it is here, is a tribute to the "can do" spirit of the Navy's Reserve Seabees and other leaders in the construction industry who, under the tireless leadership of Admiral Reider, organized the Seabee Memorial Association. Although they take great pride in this Seabee Memorial Monument, they understandably take an equal measure of pride in the living memorial they have created—The Seabee Memorial Scholarship Fund. In the few years of its existence it has already provided needed financial assistance for the education of many deserving sons and daughters of men who have served in the Seabees. In recognition of the fact that the demonstrated need is so great the Reserve Seabees, now under the dedicated leadership of Admiral Mantel and Admiral Brown, have initiated a new fund-raising campaign. I am sure that all Seabees and friends of Seabees will respond generously to their call.

Admiral Moreell once copied a passage from the diary of a young American killed in battle in the First World War:

"America must win this war, therefore I will work, I will save, I will sacrifice, I will endure, I will fight cheerfully and do my utmost as if the issue of the whole struggle depended on me alone."

The Seabees accept that stirring vow as their own. They know that preservation of the freedom from tyranny, so hard won by out forefathers, depends upon the combined strengths and will of all concerned Americans. We cannot rest assured that our way of life is forever secure. There are those who even now would steal our freedom. We must be ever vigilant and bend every effort to see that they are not victorious.

As we turn from this moment of grateful recognition of the selfless contributions of the Seabees to the welfare and freedom of our great Nation let us accept as our own the pledge of that young man in the First World War and the motto engraved on the pedestal on which our symbolic Seabee stands:

"With compassion for others
We build—We fight
For peace with freedom"

SEABEES HOT

SEABEES COLD

Those Magnificent Seabee Reserves

By LCDR RAY SMITH, CEC, USN
RNCF Central Region Representative

● Great Lakes, Ill.

RNCF, ACDUTRA, RUPPERT, TAR, FIRSTRNCB — are these the ingredients for alphabet soup? Perhaps, but more importantly, they are integral parts of the current and very active Seabee Reserve Program. The acronyms identify the Reserve Naval Construction Force (RNCF); Active Duty for Training (ACDUTRA); Reserve Unit Personnel and Performance Report (RUPPERT); Training and Administration of Reserves (TAR); and First Reserve Naval Construction Brigade (FIRSTRNCB), respectively.

Very quickly I want to tell you about our Reserve counterparts and their exceptional abilities. I say "quickly" not because I have little to tell .... quite the contrary. I say "quickly" because I want each of you to *read* this article. I believe the active CEC officer is all too ignorant of our Reserve Seabees.

If I still don't have your attention, try this comment made by a senior CEC captain, *"With one or two exceptions, I would rather mobilize with a Reserve Seabee Battalion than an Active one."* This article concerns only the Seabee Reserve Program. In a later issue of *The Navy Civil Engineer* the Naval Reserve Facilities Engineering Program will be discussed, explaining additional opportunities for the Reserve CEC officer.

First, let's get the Reserve Naval Construction Force (RNCF) in perspective compared to the Active NCF:

	RNCF	NCF
Battalion Officers	24	21
Battalion Enlisted	738	563
Number of Battalions	17	8
Number of Regiments	8	3
Number of Brigades	1	0

As you can see, the Reserve NCF is just about twice the size of the Active NCF. An interesting note here which adds to the importance of the Reserve Seabees and appreciating their competence, is that recent contingency plans call for more Seabee battalions than the total 25 listed!

The 17 Reserve battalions and 8 regiments are dispersed across the continental United States. The CEC apex of this organization is the First Reserve Naval Construction Brigade, located at Kansas City, Mo., under the command of RADM James E. Mantel, CEC, USNR-R. The reserve Seabee organization is directly responsible for the administration, inspection and management of its own program. RADM Mantel reports directly to the Chief of Naval Reserve, and receives support from the Naval Facilities Engineering Command (NAVFAC), the RNCF Program Technical Manager.

The total reserve Seabee organization allowance including the augment units — mobilization units which reinforce active commands — currently exceeds 14,000 personnel. This represents nearly 15 percent of the total Naval Selected Reserve strength. Selected Reserve are those men and women who receive pay for attending weekend drill periods. For each four hours of drill they receive one full day's basic pay. Most selected reserve programs require 48 drills per year (4 per weekend). An example of the monetary benefits derived from drills shows that a LT with over four years in service receives $40.19 per drill or $1,928.12 per year based on 1977 pay scales. The pay and allowances for the two weeks annual active duty training (ACDUTRA) increases this amount substantially. To assist the brigade staff, regiments, battalions and other units, a small cadre of active duty Civil Engineer Corps officers and enlisted personnel are assigned to the RNCF.

These regional representatives are on the staff of the First Brigade and are strategically positioned throughout the United States to coordinate and monitor the operations of four or five battalions and two or three regiments plus augment units located within their respective regions.

Each reserve Seabee Battalion has a headquarters location called a Permanent Drill Site (PDS). Surround-

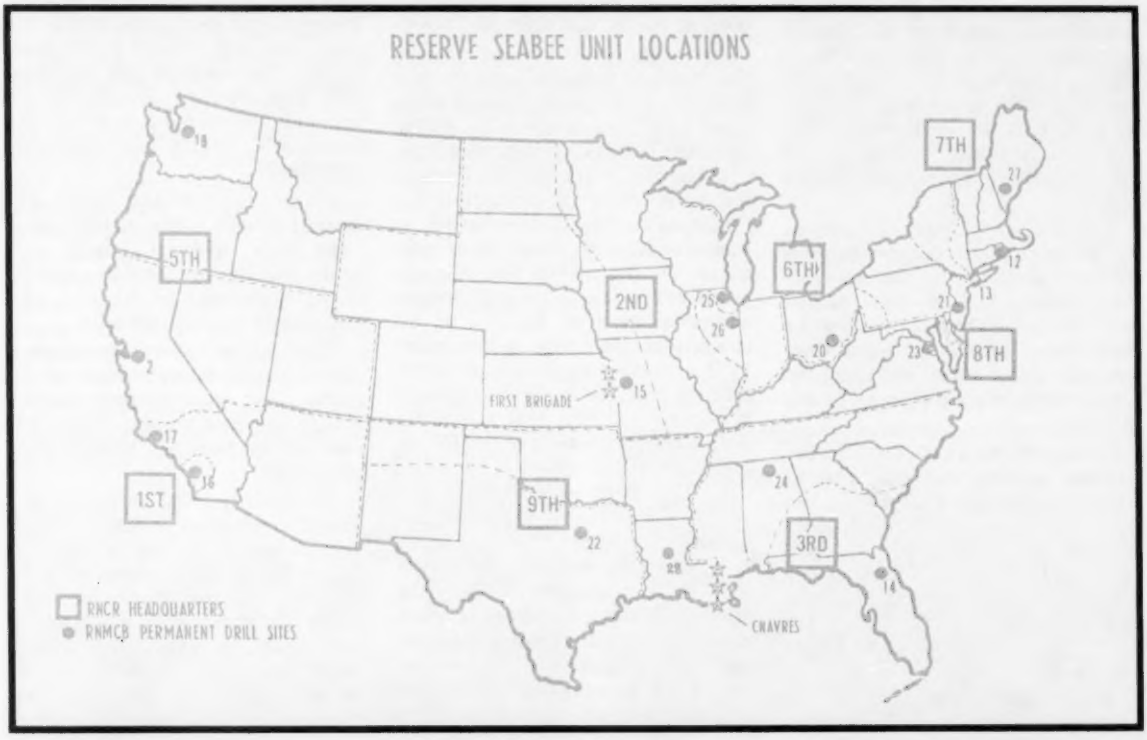
ing the PDS are from nine to fifteen detachment locations, encompassing one to five states. The battalion commanding officer, executive officer, staff (S-1, S-2, S-3) and other key individuals (with appropriate office support) usually drill every month at the PDS. Generally, the detachment personnel drill at their respective reserve centers except for two or three times a year when they also may come into the PDS for special training to work on a PDS improvement project or equipment operators or construction mechanics to operate and/or maintain the construction equipment at the PDS. At each PDS there are approximately 30 pieces of construction equipment, 782 gear and other support/mobilization equipment with a value in excess of $750,000.

Once a year every battalion performs ACDUTRA as a unit for two weeks at either CBC Port Hueneme, CBC Gulfport or a Marine Corps base such as Camp Pendleton, Calif., Lejuene, N.C. or Quantico, Va. Additionally, one battalion will undergo cold weather training at Fort Drum, N. Y.; and selected detachments learn desert operations at Twentynine Palms, Calif.; and jungle warfare at Fort Sherman in Panama. Throughout the year classroom training is mixed with field operations such as disaster recovery exercises, qualifying with the M-16 or on-the-job training in various construction projects.

That's the system and organization. The RNCF receives vital technical and administrative support from the reserve centers and readiness commands, but the program's success and strength come from the strong vertical RNCF chain of command and the dedication of the reservists who make it happen.

The intent of this article is to enlighten those who have not been associated with our Reserve counterparts and, hopefully, to generate interest enough for you to seek out one of the reserve units that meets in your area to learn firsthand about the enthusiasm and competence of the Reserve Seabees and their involvement in the *Total Force Navy.*

I invite you to take an afternoon to visit a Reserve Seabee Battalion PDS or a Saturday morning to visit a Seabee Detachment in your area. You will be very surprised. □



2 NS Treasure Island
12 CBC Davisville
13 Camp Smith, NY
14 NAS Jacksonville
15 Richards-Gebaur AFB
16 NAS Los Alamitos
17 CBC Port Hueneme
18 NSA Seattle
20 Rickenbacker AFB
21 NAS Lakehurst
22 NAS Dallas
23 Ft. Belvoir
24 Redstone Arsenal
25 NS Great Lakes
26 NAS Glenview
27 NAS Brunswick
28 Barksdale AFB

Two Seabees assemble split pipe with a hydraulically powered impact wrench.

A Watery Classroom for Seabees

By LT G. N. SNIFFIN
CEC, USNR
P. E., Pa.
Director, Special Schools Dept.
Naval Construction Training Center

● Port Hueneme, Ca.

Folks in Southern California associate *"UCSD"* with the University of California, San Diego. But Port Hueneme now has a UCSD of its own. It is the Underwater Construction Schools Division of the Naval Construction Training Center (NCTC).

The seven "majors" offered at NCTC continue to prepare Seabees for early usefulness in the construction ratings. And the construction skills of the Seabees continue to be the primary assets of the Naval Construction Force units, including the Underwater Construction Teams (UCTs).

So what's this about the "Seabee College" offering "minors?" Yes, it's true. Since October 1976 NCTC has been teaching courses in disaster recovery (see Navy Civil Engineer Summer 1976). A second minor was added to the Seabee college programs in October 1977 when NCTC began offering courses in underwater construction.

What does it take to enter the underwater construction field? First and foremost you must be an experienced Seabee. Usually a battalion tour is required before consideration for the underwater construction program. Another necessary skill is diving. This is acquired by attending one of the Navy's diving schools. Diving is *not* taught at NCTC. What is taught is the combination and extrapolation of construction and diving skills in order to accomplish projects on, in and near the ocean.

Although NCTC began offering the basic and advanced courses only last fall, development started some years ago. Back in the early 1970s, when UCT-2 was a department of the 31st Naval Construction Regiment, a ten week course of instruction was developed leading to qualification as a basic underwater construction technician. The first class of four students graduated in March 1973. Following commissioning of UCT-2 as an independent fleet unit in November 1973, increased workload forced the training program to the background. It became apparent that a separate organization dedicated solely to training was the answer.

In July 1975 such a group was established at the 31st Naval Construction Regiment. The concept was to refurbish the basic course to meet current requirements, develop the advanced course, conduct each course several times for validation, and finally transfer both courses to a designated training command. The development effort proceeded on schedule, ending with the transfer of the basic and advanced courses to NCTC.

The Basic Course

The basic course is six weeks in length. During this period many of the skills routinely required of junior UCT members are learned. The course begins with individual seamanship skills, such as small craft operation and daily maintenance. Rigging and deck seamanship are important skills learned by the basic student. Various aspects of terrestrial and underwater surveying are learned, including use of the surveyor's transit and recording fathometer.

Many underwater skills are learned as well. These include use of hand tools, hydraulic tools, rock drills, cutting and welding, excavation, material transport and underwater vehicle operation.

Exposure to project operations is gained in the latter portion of the course. The basic students participate in four field projects designed to realistically simulate typical UCT operations.

The hydrographic survey project entails conducting a detailed topographic survey of the ocean floor. Water depth is determined using the recording fathometer, mounted on a LARC V amphibious vehicle. The position of the LARC as it records depth readings is determined by using surveyor transits on shore. With the skill and teamwork learned, the class is able to take dozens of depth readings and produce a detailed bathymetric chart in short order.

The chart produced in the first project is used to select routes for the next two projects. One is the installation and stabilization of a submarine cable. The cable is pulled to the beach from an offshore platform

using inflatable float ballons for support. When the desired length has been pulled ashore, swimmers cut the floats free, allowing the cable to sink to the bottom. Interlocking half sections of cast iron pipe (split pipe) are bolted around the cable to increase its weight and protect it from surf damage.

The pipeline project simulates the installation of a sewer line. The PVC pipe sections are bolted together on shore and floated out to sea. The seaward end of the pipe is capped and the air in the pipe provides adequate buoyancy. Once the line is floating in position it is carefully flooded, allowing it to sink gently to the bottom.

The fourth project is to construct a concrete anchor to secure the seaward end of the pipeline. A form is constructed around the pipe and concrete is placed using gravity flow through a tremie pipe.

The Advanced Course

The advanced course is four weeks in length. The intent is to prepare senior petty officers to function as independent detachment leaders. The emphasis is on the planning, supervision and safety aspects of project accomplishment. Advanced technical training is also provided. Where the basic student learns how to properly tie knots, use shackles, sheaves and pelican hooks, the advanced student learns how to size line and rigging components and design rigging layouts to minimize hazards.

The advanced course commences two weeks after the start of the basic course. The field projects accomplished by the basic class are entirely planned and supervised by the advanced class. Each advanced student is given the opportunity to plan and direct a project. He also feels the full responsibility of directing project operations.

The school has three enlisted instructors assigned. These are E-6s and E-7s with UCT experience. The Department Director/Company Commander also has UCT experience and participates in the course offerings by instruction portions of the advanced course and taking part in the field projects.

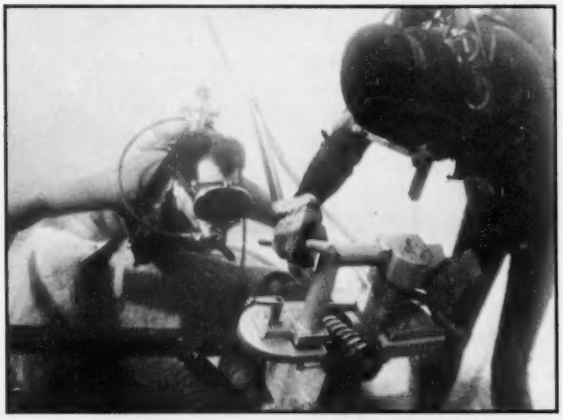
Equipment outfitting required to teach the basic and advanced courses has been provided to NCTC by NAVFACENGCOM through CESO. In addition to the rigging equipment, diving equipment and tools necessary, the school has a LARC V amphibious vehicle, an inflatable boat and outboard motor, and a small barge equipped with a winch and hydraulic boom. Planned facility improvements include the construction of a classroom and a training tank at the school site. An AMMI pontoon will be converted into a self-propelled construction barge. Completion of these projects will allow the school to function without external support, such as port services pusher boats.

What's Ahead?

The establishment of the basic and advanced courses does not satisfy all of the underwater construction training requirements. The list of specialized skills that must now be acquired through UCT in-house training is long. There are also skills presently taught only at costly factory schools. These training requirements are currently under review to determine which ones can be better met by developing Special Construction Battalion Training (SCBT) courses.

The underwater construction school is also developing special waterfront training for offering to NMCBs. A pilot course has been developed and presented several times to units deploying to Diego Garcia. This course provides instruction in basic seamanship, rigging and other waterfront skills required for pier construction and cargo ship offload operations.

Will underwater construction ever become an eighth construction rating? No. The UCTs don't need just divers; they need *Seabee* divers. Diving provides only a means of working underwater. It's the Seabee training, construction skills, and experience that gets the work done. Don't let the accompanying pictures fool you. Diving Seabees spend most of their time topside. And they must be highly skilled in their basic rating, be it equipment operator, construction electrician, steelworker, etc. Without these skills the Underwater Construction Teams would not possess the unique blend of construction skills and capability they now provide the Fleet Commanders. □



A Seebee cuts armored submarine cable with a hydraulically powered bandsaw.

A Seabee practices using a hydraulically powered rotary percussion rock drill.

NMCB-133 responds with air capability

● Gulfport, Miss.

A high state of mobilization readiness is of primary importance for Naval Mobile Construction Battalions (NMCB's). NMCB 133 was recently tested on their readiness capabilities in the first simulated "Air Echelon Minus" exercise.

The simulated mount-out of NMCB 133, titled *"Flooding Florence,"* was undertaken to aid north central Italy in a supposed emergency restoration following severe flooding. This involved 17 officers and 537 enlisted personnel. An air detachment of one officer and 88 enlisted personnel was assumed to have been previously deployed (hence, the designation *Air Echelon Minus* air detachment). A sea echelon of two officers and twenty-four enlisted personnel would follow in two landing ship tanks (LST's).

Project tasking for the exercise involved 19,700 man days and included construction of the Seabee camp, construction of emergency housing for 20,000 people, replacing power and telephone lines, and repairing 133 miles of roadways.

Airlift requirements included transporting 104 vehicles and 180,000 cube of cargo for a total weight of more than three million pounds. Embarkation statistics would include mounting out in 61 C-141's and one C-5A aircraft, and utilizing 299 standard 463L aircraft pallets (108″ x 88″).

The average utilized cargo weight for the C-141 aircraft was 41,181 pounds or 86% of its allowable cabin load of 48,000 pounds.

Overall coordination of the mount-out activities of the Constrution Battalion Center (CBC), the Twentieth Naval Construction Regiment (20th NCR), and NMCB 133 was handled at the Area Coordination Center (ACC). The ACC, located in the CBC comr·and center, was tasked with maintaining the unity of the exercise and solving problems as they arose.

NMCB 133 maintained a mount-out control center (MOCC) where graphic displays included an embarkation flow chart, an action status board which listed "action pending" items and "action completed" remarks, maps of Italy, layouts of CBC, Gulfport and the staging area, and a status chart of the staging evolution.

An internally developed flow chart was the principal tool utilized by NMCB 133 to monitor the status of the embarkation. Updating completed tasks on the flow chart was continuous providing an instant check on problems which may develop. The MOCC advised the cognizant company or department of problem areas or slippage and monitored them until an up-to-date schedule was realized. The MOCC also handled all message traffic and correspondence into and out of the command. This provided further checks on the progress of each evolution of the mount-out.

The *"Flooding Florence"* exercise was completed on the fifth day, approximately twenty hours ahead of schedule. This display of readiness surpassed the expectations of the Atlantic Fleet construction battalions (CBLANT) evaluators according to LT Dennis Bussey, officer in charge of the inspection team. The inspectors were impressed with the high level of cooperation which was evident between the participants: the Construction Battalion Center, the 20th Naval Construction Regiment, NMCB 133, representative Air Force commands, and the civilian employees of all commands involved. LT Bussey pointedly recognized the fine efforts of the employees who worked with the supply department in transporting cargo to the staging areas.

The exercise was followed by the practice loading of various pieces of equipment aboard a C-141 cargo aircraft at the Gulfport-Biloxi Municipal Airport. Designed for practice-loading of special and diverse pieces of equipment, the loading team consisted of personnel from NMCB 133, the USAF Military Airlift Command air lift element team, and the 435th Military Airlift Wing under general guidance of the 20th NCR and the CBLANT inspection team.

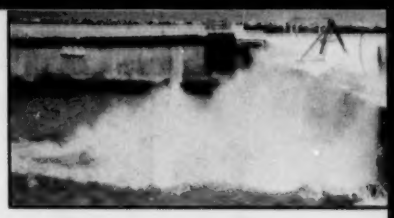
Completion time was an important factor under study by the CBLANT inspection team; however, training, adaptation to unique circumstances, personnel capabilities, and quality of performance were also scrutinized. The simulated mount-out helped to identify areas where training should be increased to further advance efficiency.

The performance of CBC, the 20th NCR, and NMCB 133 was regarded as highly successful in exhibiting the readiness capability of a battalion *"Air Echelon Minus."*

Captain James T. Taylor, CEC, USN, who was the commanding officer of the Construction Battalion Center and the 20th Naval Construction Regiment during the exercise stated: "NMCB 133 and all of the troops looked great. Everyone approached this exercise with a serious and professional attitude. With this type of situation a lot of learning takes place. I'm happy with the results."

The commander, Construction Battalions, Atlantic, expressed the success of this exercise as: "The most significant readiness improvement objective attained during my tenure as COMCBLANT. It has now been demonstrated that the "Air Echelon Minus" can be mounted out of Gulfport within an established time." □

Blasting with UCT-ONE



By LT. WILLIAM M. HALL
CEC, USN
Assistant Officer in Charge
Underwater Construction Team ONE

● Port Hueneme, Calif.

Underwater Construction Team (UCT) ONE has provided underwater controlled blasting capability for a quaywall and harbor improvement project at the Atlantic Undersea Test and Evaluation Center (AUTEC) on Andros Island, Bahamas.

The blasting requirement was to pulverize and remove about 4,500 cubic yards of hard coral. The economy of using commercial blasting agents rather than large excavation equipment was demonstrated by cost analysis. The close proximity of delicate electronic sensors and a very strict local blasting code dictated controlled blasting techniques as used in terrestrial construction. The successful completion of the underwater blasting project has demonstrated both UCT capability and a frequently overlooked solution to the rising cost of marine excavation.

During the 1977 deployment cycle, Naval Mobile Construction Battalion (NMCB) Four was charged with completion of the relocation and repair of the quaywall located in the AUTEC harbor which had been started by a previously deployed NMCB. The construction method was to first drive the new line of sheet pile behind the existing quaywall. The existing pile was then extracted, and the remaining material between original quaywall and new pile line was to be removed to a depth of 10 feet below mean low water by excavation equipment.

Dragline, clamshell, and backhoe operations proved unsuccessful to remove the fill and bed coral. Approximately 4,500 cubic yards of bed coral remained in the harbor when NMCB-4 resumed the project. A review of the alternative means for removal of the bed coral brought forth three possible solutions: a larger crane with heavier attachments; a cutter-head dredge; or, the use of controlled blasting. A cost analysis of these alternatives indicated that controlled blasting would be the most economical.

Due to the isolated, site blasting operations would require simplification. An explosive that was cap sensitive and not require the use of primer was desired. Due to the drilled pattern and the charge limit (10 pounds equivalent of trinitrotoluene (TNT)) dictated by the local blasting code, it was further desired that the explosive have minimum propagation. This would allow the delay method to be used to reduce vibration and improve fragmentation.

The physical characteristics of the bed coral indicated that an explosive with medium density, medium velocity, and high energy was needed. The explosive would have to be available in a usable cartridge size. Further, it would have to be water resistant. The hot, humid environment and the type of bunker storage available indicated that a water gel explosive rather than a nitroglycerin-based explosive would be preferred. This would preclude exposure of the explosive handlers to headache-causing ingredients; and the explosive would have a lower sensitivity to impact, shock, and temperature.

A market survey of commercially available explosives revealed that a DuPont explosive, *Tovex 800,* would be an acceptable selection and meet requirements for the AUTEC harbor project.

A typical blasting procedure consisted of five separate tasks. The first was the drilling of the boreholes. The desired blast site was located by the coordinates from the shot plan. Two drill teams were set to work drilling the boreholes in the pattern designated by the head blaster. A third team was assigned to use the gold dredge to clear the borehole area of loose material and to clear the borehole of drill spoil at selected intervals. This job was completed in an average time of four hours.

The second task was charge preparation. Each cartridge was primed with either a Deta Prime primer or a mock generator made from detonating cord (25 grain). The mock generator used was a hangman's knot with a minimum of four wraps. The primed cartridges were taped onto wooden furring strip, and their detonating cord leads were connected to a pre-cut down line.

The third step was site clearance which was concurrent with charge preparation. Site clearance required the breakdown and removal of all equipment from the blast site, the erection of a cordon line, the removal of personnel and small craft from the harbor area, notification of appropriate liaison personnel, and the display of the blasting flag. Prepared charges were placed in the boreholes, and the down lines were then connected to the trunk line. The firing wire was extended to a predetermined location and all personnel moved to designated observation points. Finally, the head blaster and his assistant would "cap-in" and move to the head of the firing wire. The finale was the actual charge detonation of the charges. The head blaster would survey the area for unauthorized personnel, small craft, or low-flying aircraft. If satisfied that the area was clear, he would attach the firing leads to the blasting machine and his assistant would shout "fire in the hole" to the four points of the compass. At the end of the last shout, the charges would be detonated.

After detonation occurred, the head blaster would disconnect the firing leads and inspect the blast site. When satisfied that a proper detonation had occurred, "all clear" would be sounded and normal operation would resume. No misfires occurred on the AUTEC harbor project.

The conclusion of the AUTEC harbor project was successful. The explosive delivered twice the quantity of material expected. This increased yield offset the increased time required for drilling. These factors balanced to enable the work detachment to maintain the scheduled rate of production. In fact, work on this project was finished exactly on the day that project completion was planned. Aside from demonstrating a valuable NCF capability, the successful completion of the AUTEC harbor project has proven the economic value of underwater controlled blasting. □

What it takes to be alert!

By CDR J. R. JACOBSEN, CEC, USN
Commanding Officer
NMCB-40, P. E., Pa.
and
JO2 C. E. WHEELER, *NMCB-40*

As the Navy's Atlantic/European alert mobile construction battalion, NMCB-40's mission gives primary consideration to maintaining a high state of readiness in construction support to Commander in Chief, U.S. Naval Forces Europe (CINCUSNAVEUR); Commander in Chief, U.S. Atlantic Fleet (CINCLANTFLT) and other U.S. forces when required to meet unusual circumstances.

Readiness includes the capability for an expeditious response by the battalion, such as an air detachment (AIR DET), or even the entire battalion; self-defense capability, accomplishing battle damage repairs, disaster control tasks; and, of course, basic construction capability. In addition, NMCB FORTY serves as an effective instrument of U.S. foreign policy by initiating and continuing action programs which promote positive relations between members of the battalion and local residents. Being assigned as an alert battalion is nothing new to NMCB-40 as it was the Pacific alert battalion when assigned to Guam.

Deploying to Europe in March the main body of NMCB-40 was assigned to Rota, Spain and detachments to Italy, Greece, Scotland and Diego Garcia. Being the Atlantic/European Alert Battalion requires special preparedness and training, both in homeport and on deployment. An example of this training is the air detachment 'mount out' exercises which are periodically conducted by the battalion. In homeport, Port Hueneme, Calif., an AIR DET exercise was conducted in January during which the 89-man detachment, including 34 pieces of construction, automotive equipment and 50 tons of supplies, were loaded into simulated C-141 aircraft in less than 48 hours.

The exercise was further expanded into a full battalion 'mount out' to Fort Irwin, about 150 miles from Port Hueneme. Cold weather gear was drawn and bivouac areas established, and training was conducted in tactical formations, use of firearms, shelters, food and water procurement. Extensive firing of the full allowance of weapons was conducted including night firing demonstrations. The culmination of this training was a full battalion tactical field exercise which included nuclear, chemical and biological warfare contingencies as well as armed aggressors with tank support.

Mount out training while on deployment to Rota includes surprise AIR DET exercises during which men, equipment and supplies must be quickly tailored to the 'sudden' requirement, extracted from the battalion's normal structure, prepared for air shipment and staged in exact conformance with the loading plans of real or simulated aircraft. Military training with all hands participating during the Rota deployment is highlighted during a comprehensive week when all other battalion activities are halted. The training concept places emphasis on reinforcing combat skills previously learned. NMCB-40's military readiness is further enhanced by periodic musters and drills of its ground defense units which support and augment Navy Station/Rota defense and security forces.

Construction skills of the battalion are utilized and progressively improved through the accomplishment of a variety of projects at Rota and detachment sites. The main body at Rota is tasked with the construction of a navy lodge, two ground support equipment storage buildings, an addition to the hobby shop, an addition to the bowling alley, expansion of the small arms range, construction of the fire crash access roads, and also extensive repairs to major waterfront structures used jointly by the U.S. and Spanish navies.

The main body is also engaged in construction of a water receiving and water storage system which will assist the Naval Station and possibly the citizens of Rota during dry summer months. The battalion's detachment at Sigonella, Sicily also has significant construction to accomplish: an addition to a dining facility, building a refueler shop, a vehicle holding building and a CPO Club. The detachment at Nea Makri, Greece, is constructing an addition to the enlisted club, installing fuel storage tanks, building a supply storage warehouse, and expanding the fire protection system for the communications station.

The NMCB-40 detachment at Souda Bay, Crete, has the job of rehabilitating two enlisted barracks and also improving existing roads and parking lots.

The Holy Loch, Scotland, detachment is tasked with the construction of a building for public works shops and offices, and the men in Diego Garcia are constructing a mile of POL pipeline.

Another significant part of NMCB-40's activity is that of community involvement. One might ask, "How does this fit into a battalion's mission?" Well, community involvement means getting to know those who work and live on the naval activities where the Seabees are or getting to know the citizens of the local community, and assisting them when needed. Community involvement to the men of NMCB-40 may mean reconstruction of a water cistern for a local servicemen's center in Rota or building a playground for an orphanage in Greece, as the Nea Makri Detachment did. Community involvement also can mean spending an entire holiday playing baseball, running races, jumping rope, and having a sing-along with 60 children of the San Carlos Orphanage in Spain. Community involvement means becoming a Boy Scout leader, and hosting the scouts on a Saturday at the Seabee Camp, so that they may have an opportunity to earn a particular merit badge and at the same time giving the Scouts a chance to see what it is like to be part of a Mobile Construction Battalion. It means the Battalion Medical Officer and Dental Officer volunteering their time at the Naval Hospital in an extra effort. Timely planning, thorough training, continuing enhancement of military and construction skills and individual dedication, the officers and men of NMCB-40 are believed fulfilling the unique requirement of being the Navy's Atlantic alert construction battalion.

The spirited Seabees of NMCB-62

SEABEES INVITE their crew leader to be the first to enjoy the fruit of their labor — completion of a swimming pool on the remote atoll of Diego Garcia.

By LT LARRY LINDSEY SC, USN and JO3 P. M. CALLAGHAN

● Diego Garcia

Ask a Seabee what spirit is, and he may give you an uncomprehending glance. Given the arduous deployment schedules and remote locations, spirit is a natural to him and doesn't need definition. Spirit starts from the top — it starts from the bottom — in Naval Mobile Construction Battalion 62, it is anywhere a job needs to get done.

On the remote island outpost of Diego Garcia, a tiny blip in the Indian Ocean—which most navy types speak of in hushed fear of ever having to visit—spirit is what makes a man work 15 hours one day and get up early the next, eager to work 16.

There is a multitude of Seabees who would actually like to go back. Spirit is comprised of satisfaction in oneself, one's job and one's unit. It sets the Seabees apart from just another unit doing just another ho-hum job.

NMCB-62, better known as the Minuteman Battalion, has compiled an enviable record. In 1977, it received not only the Atlantic Fleet "E" as best of type, but also the coveted Peltier Award which signifies the excellence of the entire Naval Construction Force.

A large reason for that record has been a universal sense of spirit. The men of Sixty-Two take pride in what they have done and what they can do.

At no time does that pride manifest itself more than at turnover time, when one battalion relieves another at the deployment site. On Diego Garcia, NMCB-62 was relieved by NMCB-74—their arch competitors and friendly rivals for the "E" ribbon.

But the men don't waste time harping on their recognition and Command Master Chief William Sweeney explains why: "The men probably felt better and gained more confidence after winning the "E" and Peltier Award. But you don't hear them brag about it; they just keep working. Sure, we've got a reputation, and we don't want it tarnished. We're not about to say, 'Leave it for someone else—we deserve a rest'. We'll just keep up with ourselves and make things better by doing so."

It's incredibly difficult to define, this sense of spirit. But when it's not there, the absence is noticed right away. Of course there's the "lip service" variety. But that kind of spirit wears out long before an eight-month deployment gets well underway.

Sixty-Two grumbles with the best of them, but it's a healthy grumble that reflects a sense of wanting to do better. A Minuteman can grouse about long hours, heat, or anything else in the battalion.

But let an outsider "bad mouth" his outfit, and it may be time for "knuckle city." Sixty-Two may not be the only Naval Construction Battalion that can do things well, but you'd have a hard time convincing them they're not the best.

This pride of NMCB-62 is exemplified by men who worked on the difficult and exacting fuel ring preparation job on Diego Garcia.

"Never saw such a great job ... nobody has ever been this ready for us." (says) the contractor who followed the Minuteman crew—*ahead* of schedule.

What made the particular crew work long past sunset under the awkward glare of portable lamps?

Another example. One day there was a flat field; next day, the skeleton of a two-story bachelor enlisted quarters appeared. What made that crew dig in, learn an entirely new construction process, then turn right around and use that training far into the morning hours?

The battalion's commanding officer, CDR. Charles Fegley, sheds some light on the motivation of his men: "I've heard the words 'sincerity' and 'tenacity' used by many of our visitors in describing the Minuteman attitude. 'Sincere,' because they know any job worth doing ought to be done right; 'tenacious,' because each man pays attention to the details of his job—being basically correct just isn't good enough."

(continued next page)

Spirited Seabees

(continued from preceding page)

And it's not merely construction types who are totally involved with the building efforts of NMCB-62.

At the swimming pool job site, one could find personnelmen, storekeepers and other so-called "pencil pushers" asking the crew "How's it going?" Everybody was curious about the "Gunite" concrete-forming process, and with the final arrival of special equipment, it became a battalion-wide sense of concern and pride to see the project finished.

It was this sense of concern and contagious pride that had the project officer, his chiefs and even the CO engaging in the good-natured "tomfoolery" of taking that first swim in what was to be the new pool. As CDR. Fegley puts it, "This spirit of concern and cooperation—helping one another out—came about by setting high individual standards. The men don't waste time tearing someone else down because of a problem that's arisen. What they do is get together—regardless of rank—and find a mutual solution."

It was the same type of feeling that prevailed at the enlisted men's club and airfield projects, materials yard improvements and ship offloads. During the EM club's final stages of completion, men from all the construction rates volunteered their off-duty time to help clean the building and assemble furniture.

As they say, all work and no play—but no one has ever accused a Seabee of being dull. They've been called many other things in their fascinating history, but "dull" has never been one of them.

The sense of pride and spirit spills over easily from the job site to the athletic field to the beach—when and wherever good liberty is available.

The cliche of "playing together" is definitely applicable to the Minutemen. NMCB-62 has worked together, played together and stayed together all over the world.

"Relationships between chiefs, officers and the troops of the Minuteman Battalion are excellent—on duty and off," notes Master Chief Sweeney. "When it comes time to solve a problem, this kind of cooperation is invaluable. No one tries to exclude himself; isolation gets us nowhere.

They've been from here to there and back again, and are ready to go once more. That's the nature of the Seabees and the men of Sixty-Two. Doubt it, and they'll be more than happy to set you straight—in less than a minute. □

Into the deep with UCT-2

By UTC/DV A. C. CALVERT

LEADING THE WAY, CEC/DV D. M. Handley, enters the waters of Subic Bay for pier inspection. Standing by is CM2/DV R. F. Pockrus (center) and CE2/DV B. W. Rogers (bottom).

Members of Underwater Construction Team Two (UCT-2) figuratively went underwater in January 1977 and didn't surface again until this June.

The 18-month period of submarine activities was a result of the Commander in Chief, Pacific Fleet (CINCPACFLT) requesting the unit to inspect all Navy waterfront activities within the Pacific area to determine the present condition of piers, wharves, bulkheads and small craft berthing.

The lengthy survey will enable Pacific fleet officials to project costs for replacement or repair of installations that the Seabee divers discovered to be deteriorating.

The program started at Apra Harbor in Guam, where considerable harbor damage had been earlier caused by *Typhoon Pamela*. UCT-2 members were led at this locale by UTC/DV A. C. Calvert, where standards of inspection methods and operations were established.

Later the team undertook their most extended inspection at Pearl Harbor, Hawaii. Led at this site by CEC/DV D. M. Handley, the underwater survey of the Naval complex required three months. This was contrasted with a three day period later required at Alameda, Calif.

Inspection of quaywalls, concrete and wooden pilings and steel sheet piles was considerably aided by assistance from the Civil Engineering Laboratory (CEL) Port Hueneme, Calif. Two devices, an ultra-sonic tester and an underwater voltmeter, recommended by CEL, were invaluable in measuring thickness of steel and sheet piles. Wooden piles, however, required core samples to ascertain integrity.

The area covered by UCT-2 diver constructionmen embraced an area of 40,000 miles and required over 800 separate dives with 960 underwater hours logged. The extensive survey also included team inspections at Yokosuka, Iwakuni and Sasebo, Japan; Okinawa; Republic of the Philippines; Midway Island and the sprawling naval harbor of San Diego, Calif.

Overall inspection results indicate that steel and concrete pilings were generally in better condition than anticipated. As expected, wood pilings and bulkheads have suffered the most damage.

The concluded inspection data has been forwarded to the Pacific Division, Naval Facilities Engineering Command at Pearl Harbor for correlation with that agency's appraisal of waterfront structures above the waterline. □

Ben Moreell
Admiral, CEC, USN
1892-1978

Admiral Moreell — 1946

Seabee memorial tribute is paid to Admiral Moreell in front of the library bearing his name at the Naval School, Civil Engineer Corps Officers. The service coincided with that held at Arlington National Cemetery.

Admiral Ben Moreell, CEC, USN, famed as the founder of the Navy Seabees and wartime leader of the Navy's Civil Engineer Corps and the Bureau of Yards and Docks, died Sunday, July 30, of cancer, at Montefiore Hospital, Pittsburgh, Pa.

He was 85 years of age at the time of his death.

Following his brilliant naval career Admiral Moreell pursued a prominent career in government and industry. (His complete biography appears on page 28.)

He is survived by his widow, Jesse Grimm Moreell; two daughters, Mrs. Marion Jordan of Pittsburgh and Patricia Moreell of Boca Raton, Fla., and three grandchildren, Lelia and Julian Gammon III and Barry Jordan.

In recent years, Admiral Moreell maintained his residence with Mrs. Moreell in the King Edward Apartments, 4609 Bayard Street, Pittsburgh, Pa., 15213. The family has requested, for those desiring, that memorial contributions be directed to the Seabee Memorial Association, of which Admiral Moreell was chairman of the board at the time of his death; The Navy, Marine, Coast Guard Residence Foundation and/or The Navy Relief Society.

Initial services were held at the Calvary Episcopal Church in Pittsburgh. Memorial services with full military honors were held at the Washington Cathedral, Washington, D.C., August 3, with The Very Reverend Francis B. Sayre, Jr., dean emeritus of the cathedral, officiating. The eulogy was delivered by The Reverend Edmund A. Opitz. (Text appears on page 29.) Interment was in Arlington National Cemetery.

" 'Displaying great originality and exceptional capacity for bold innovation, he inspired in his subordinates a degree of loyalty and devotion to duty outstanding in the Naval Service, to the end that the Fleet received support in degree and kind unprecedented in the history of naval warfare.' "

— From citation awarding Admiral Moreell the Distinguished Service Medal, 1945.

Admiral Ben Moreell, CEC, USN

Ben Moreell was born in Salt Lake City, Utah, on September 14, 1892. His family moved to St. Louis, Mo., in 1896 where he attended the public grade and high schools. He graduated from Washington University, St. Louis, in 1913, with the degree of Bachelor of Science in Civil Engineering. At college he played on the varsity football team for three years and was Captain of the track team.

After four years in the Engineering Department of St. Louis, he was commissioned in June 1917, a Lieutenant (junior grade) in the Civil Engineering Corps of the Navy, as the result of a competitive examination.

He spent the next 29 years and three months in the Navy. On December 1, 1937, President Roosevelt appointed him Chief of the Bureau of Yards and Docks, and Chief of Civil Engineers of the Navy, with the rank of Rear Admiral. He was reappointed for four years on December 1, 1941. On December 1, 1945, he was appointed Chief of the Material Division, Office of the Assistant Secretary of the Navy. He was advanced to the rank of Vice Admiral on February 1, 1944, and to the rank of Admiral on June 11, 1946. He retired from active duty on September 30, 1946.

In 1932-33 he was assigned to duty under instruction at the French Government Engineering School in Paris (Ecole Nationale des Ponts et Chaussées).

In October 1945, President Truman placed him in charge of the major portion of the Nation's petroleum industry which had been seized by the Government as the result of a nationwide strike.

In May 1946, the strike-bound Nation's bituminous coal industry was seized by the Government and he was designated to be Coal Mines Administrator.

On retirement from the Navy in 1946, Admiral Moreell entered private industry as President of the Turner Construction Company of New York. In March 1947, he was elected Chairman of the Board, President and Chief Executive Officer of Jones & Laughlin Steel Corporation of Pittsburgh, Pa. He relinquished the Presidency in 1952, but remained as Chief Executive Officer until October 1957, and as Chairman of the Board until October 1958, when he retired from all executive duties and entered private practice as a business and economic consultant. He remained as a Director of Jones & Laughlin until April 1965.

In June 1958, he joined with the Honorable Charles Edison, former Secretary of the Navy and former Governor of New Jersey, then Chairman of the Board of the McGraw-Edison Company; and the late Mr. Henning Prentis, Chairman of the Board of Armstrong Cork Company; to organize Americans for Constitutional Action (ACA), a non-partisan, nonprofit, nationwide, political action organization. ACA's goal is to help elect to the Congress of the United States, men and women who are dedicated to the restoration and preservation of the spirit and principles of the U.S. Constitution, as expounded by the Founding Fathers of our Republic. Admiral Moreell was elected Chairman of the Board of Trustees and Chief Executive Officer of ACA. In January 1965, Major General Thomas A. Lane, USA (Retired), was elected President and Chief Executive Officer of ACA; Admiral Moreell remaining as Chairman of the Board. All Officers and Trustees of ACA (33 in all) serve without compensation.

Admiral Moreell has received twelve honorary degrees from American universities and colleges, five as Doctor of Engineering (one of which is from his Alma Mater), three as Doctor of Science and four as Doctor of Laws. In 1961 he received the Distinguished Alumni Award from his Alma Mater.

He has been honored with The John Fritz Gold Medal by the four major engineering societies "for notable industrial achievement"; The Washington Award of the same societies "for accomplishments which pre-eminently promote the happiness, comfort and well-being of humanity";the Henry C. Turner Gold Medal of the American Concrete Institute"for notable achievement in concrete design and construction"; the Wason Medal of the same Institute for original "Research on Articulations for Concrete Structures"; the Moles Award for "accomplishments in the design and construction of marine and other heavy structures"; the Golden Beaver Award for "achievements in heavy construction in the western United States' and the William Metcalf Award of the Engineers' Society of Western Pennsylvania for "outstanding engineering achievement".

He holds honorary memberships in the American Society of Civil Engineers, the American Society of Mechanical Engineers, and the Naval Academy Alumni Association. He is a member of Sigma Xi, honorary scientific fraternity, Tau Beta Pi, honorary engineering fraternity and Delta Mu Delta, honorary business administration fraternity.

He has received the Navy's Distinguished Service Medal; a Gold Star in lieu of a second Distinguished Service Medal; the Legion of Merit; the Order of the British Empire, Honorary Commander, Military Division; and other war-service medals from our own and foreign governments.

The American Cancer Society conferred on him their 1957 Medal, "in recognition of his important contributions to the control of cancer." He received six awards of The George Washington Honor Medal from the Freedoms Foundation at Valley Forge, four Awards of Merit of the American Academy of Public Affairs of Los Angeles, and two Liberty Awards of the Congress of Freedom, Inc. He received a number of awards and commendations from civic, fraternal and veterans organizations, and from several units of organized labor.

Admiral Moreell was the organizer of the Navy's Construction Battalions, the famed Seabees of World War II.

He served as Chairman of the Task Force on Water Resources and Power of the Second Hoover Commission; member of the Board of Consulting Engineers for the Panama Canal; and Director of the Federal Reserve Bank of Pittsburgh. He was Chairman of the Special Advisory Commission on Future Development of Academic Facilities for the United States Naval Academy, 1961. He was a member of the Board of Visitors, U.S. Naval Academy, 1953-1955 and chairman in 1955. He served as President of the Society of American Military Engineers, the American Concrete Institute and The Army and Navy Club of Washington, D.C. (three terms), and as Trustee of The Foundation for Economic Education and the Intercollegiate Society of Individualists. He is a Trustee of Grove City College, Grove City, Pa.

He is the author of "Standards of Design for Concrete" (1929); "Our Nation's Water Resources - Policies and Politics" (1956); "The Admiral's Log: God, Man, Rights, Government" (1958); "The Admiral's Log II: In Search of Freedom" (1960); and numerous articles on engineering, industrial, social and economic subjects. He is a contributing author to the Mc-Graw Hill "The Top Management Handbook" (1959), and "The Necessary Conditions For A Free Society" (Van Nostrand - 1961).

When asked which of his honors meant most to him he replied: "They are all very meaningful and deeply appreciated by me. I accepted all with modest pride. The following excerpt from the citation for the Distinguished Service Medal presented in 1945 gives me the greatest sense of a job 'well done':

(See bottom of preceding page)

Salt Lake City, Utah
14 September 1892

Pittsburgh, Pa.
30 July 1978

A Eulogy By The Reverend Edmund A. Opitz

Admiral Ben Moreell was a man who stood for something. He stood for several things, as a matter of fact – the permanent things. He stood for God and Country, and for the freedom of the individual person. Ben Moreell wrote his books and delivered his lectures to explain and defend these ideals. He deployed both the written and the spoken word with energy and skill. What is more important, he lived out everything he believed. There were no loose ends – he was a man of complete integrity.

The final measure of a nation's greatness is that nation's goodness. And the test of a nation's goodness is the quality of life lived by the men and women who comprise that nation. If a significant number of citizens are people of firm character and high moral purpose, and if they are sufficiently numerous to establish the tone of their society, then that nation is a great and good nation. The kind of goodness we are talking about spreads mainly by contagion – it is something we catch from those in whom it already lives. Reason and persuasion are important but not sufficient. Unless sustained by personal example, they fail. Admiral Moreell argued his case with persuasive skill, but he moved all of us to a higher level by what he was.

He was a man of formidable physical presence. He towered well over six feet, was powerfully built, and square-jawed. He was a natural athlete – a star fullback at Washington University and captain of the track team. He was physically vigorous throughout most of his life, but with his strength there was a characteristic courtesy and gentleness. He was also devout and a churchman. His piety was natural to him, as if by the intensity of his own living he had established a beachhead with a Power beyond himself.

Ben Moreell was a civil engineer by training, and an outstanding member of that profession. He received just about every honor that his peers in the field of engineering could confer. Honors came to him from other sources as well. Twelve colleges conferred honorary doctorates on him. Several foreign governments acknowledged his services, awards too numerous to mention were bestowed by organizations in this country, and he received the Navy's Distinguished Service Medal with Gold Star.

The young engineer was four years out of college when he took a competitive exam and was commissioned a lieutenant (junior grade) in the Civil Engineer Corps of the Navy. It was June of 1917, and Moreell was to spend the next 29 years and three months in the service of his country. Ben Moreell was not only a great engineer – he was Navy.

In 1937 Ben Moreell was raised to the rank of Rear Admiral and appointed Chief of the Bureau of Yards and Docks and Chief of Civil Engineers of the Navy. He was reappointed for a second four year term a week before Pearl Harbor, and moved on to organize the Navy's Construction Battalions, the famed Seabees of World War II. The exploits of these daring men are the stuff of which legends are made, but in this case the legends fade by comparison with the deeds. These 258,000 men, during a five year span, accomplished the largest construction program against the most difficult odds that the world has ever seen. The Seabee motto was "Can Do" and they did. As they said of themselves, "A Seabee is a soldier in a sailor's uniform, with Marine training, doing civilian work at WPA wages." The Seabee definition of morale is a classic: "Morale is when your hands and feet keep working when your head says it can't be done." No World War II outfit had a higher morale and it is still alive. Several years ago I referred to a friend as an ex-Seabee and was tartly informed that "there's no such thing as an ex-Seabee." The citation for the Distinguished Service Medal presented to Admiral Moreell in 1945 reads in part: "...displaying great originality and exceptional capacity for bold innovation, he inspired in his subordinates a degree of loyalty and devotion to duty outstanding in the Naval Service."

Moreell retired from active duty in the Navy in 1946, as a four-star Admiral, the only man of his time to hold such a rank who had not graduated from the United States Naval Academy. But he was made an honorary member of the Naval Academy Alumni Association, and in no one's affections did Annapolis hold a higher place.

Now in civilian life Moreell became a topflight industrialist, as president and chief executive of Jones & Laughlin Steel Corporation. He retired from business in 1958.

Moreell in retirement was busier than ever, delivering his lectures and writing his books. More and more he centered on the theme of "This nation, under God," expounding the ideal of a republic of free men, under a constitution which defined and limited the exercise of political power. Each person has free will and a soul; and for the proper ordering of his soul he's responsible to God. A person's ability to carry out his duty to God is impaired to the extent that he is coerced by others; so the role of government is to protect each person's private domain and secure his rights. This is the indispensable religious foundation for free political institutions.

Setting forth his credo, Moreell wrote: "I believe that unless each of us rekindles his faith in individual freedom and in individual moral responsibility to his God and his neighbor, we will surely lose all that is precious in our way of living . . . to me, the greatest issue of our time is the restriction of individual liberty by means of coercive force. This issue permeates all fields of human activity and affects our moral, social, and economic structures."

One of Ben Moreell's favorite maxims is attributed to George Washington: "If to please the people we offer what we ourselves disapprove, how can we afterward defend our work? Let us raise a standard to which the wise and honest can repair. The rest is in the hands of God."

A great and a good man passed this way, and he lived steadfastly for values which are eternal. He died full of years, firm in his faith – a blessing to all who knew him, and even to multitudes of others.

God gave us a man; God has retired him from the ranks. May he live eternally in peace. Amen. □

Reorganization of Facilities

Many significant events have occurred within NAVFAC during the past year. One of the most important has been the reorganization of the Facilities Management group here in Headquarters. Shortly after I assumed command, I made a commitment to give increased emphasis to our public works business. This reorganization is a major step in that direction. The special emphasis is in direct response to various CNO initiatives and an increasing need of the major claimants and their activities for public works support in energy, environmental, facilities maintenance, and transportation functions. It also reflects our desire to continually improve the management and operation of our Public Works Centers.

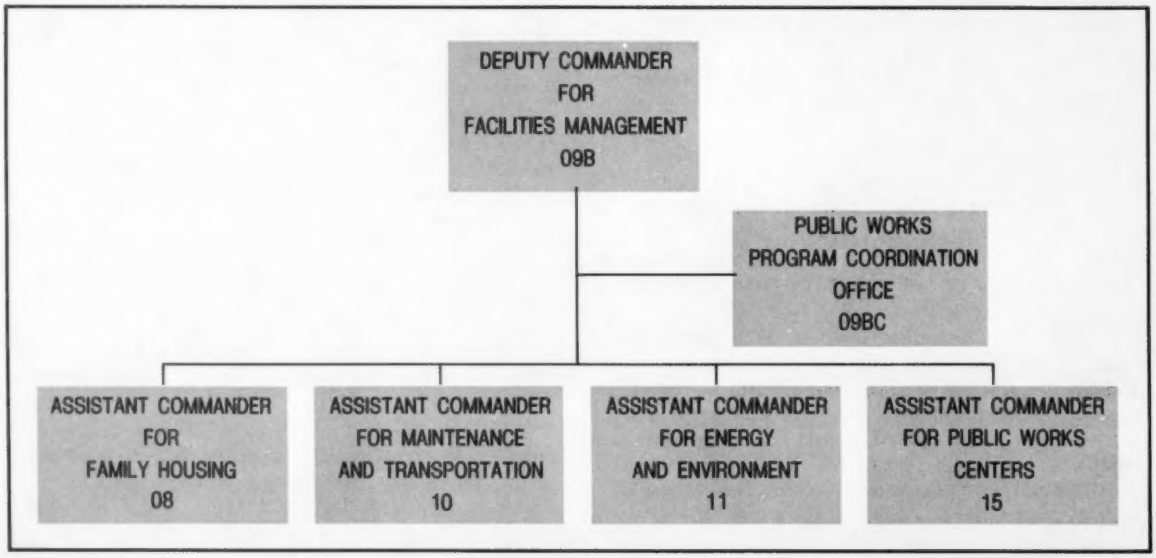
The reorganization results in four Assistant Commanders reporting through the Deputy Commander for Facilities Management — Housing (Code 08), Maintenance and Transportation (Code 10), Energy and Environment (Code 11) and Public Works Centers (Code 15). Each of these Assistant Commander billets will, in the long run, be filled by a Captain.

I want to share with you some of the considerations that led to these actions. First of all, I hope that these changes remove all vestiges of our old Recommendation 76 philosophy. NAVFAC no longer exerts a direct management role over public works departments that are external to our command chain. Each major claimant has his own facilities management responsibility, and makes the necessary management decisions. Direct NAVFAC public works management occurs only at the Public Works Centers and in the public works departments at our Construction Battalion Centers.

NAVFAC's primary public works role is in providing public works support external to our command chain. This support basically consists of: establishing maintenance policy; establishing maintenance standards; obtaining specified assets (centrally managed programs); developing public works technical guidance and public works management tools (maintenance control systems, etc.). This facility management support is to be provided for the use of the Public Works Departments at all of the Navy's shore activities. We do this in much the same way that NAVSUP supports the Supply Departments. While we encourage their use, we do not enforce it; that is the role of the Navy Inspector General and the Navy Auditor General.

Under the Assistant Commander for Energy and Environment, we have combined the Project Coordinator for Energy (PC-3), the former Utilities Division (old Code 102), the MUSE Branch (old Code 1012) and the former Environmental Division (old Code 104). Our objective is to put more teeth into the important energy initiatives that NAVFAC can and must take if we are to prevent the "energy tail" from wagging the Navy's "operational dog". Energy, utilities, MUSE and environment are closely related functions, and in many cases interwoven. While we were reviewing and making these organizational decisions, I received a letter from Admiral Rickover. His thrust was to ensure highly reliable electrical energy for nuclear ships and submarines when they are at pierside. In this new initiative, he is asking for a "zero defects" electrical utility system! This is but one of the many items that will be a challenge to our new Assistant Commander for Energy and Environment.

Working for the Assistant Commander for Maintenance and Transportation will be the former


DEPUTY COMMANDER FOR FACILITIES MANAGEMENT 09B
PUBLIC WORKS PROGRAM COORDINATION OFFICE 09BC
ASSISTANT COMMANDER FOR FAMILY HOUSING 08
ASSISTANT COMMANDER FOR MAINTENANCE AND TRANSPORTATION 10
ASSISTANT COMMANDER FOR ENERGY AND ENVIRONMENT 11
ASSISTANT COMMANDER FOR PUBLIC WORKS CENTERS 15

Maintenance Division (old Code 101), the former Industrial Engineering Branch (old Code 1053), and the former Transportation Division (old Code 103). Specific responsibilities of the new Maintenance Division (Code 100) include maintenance policy, maintenance standards, public works technical guidance and public works management tools.

Having a separate Assistant Commander for Public Works Centers will allow us to focus top level attention on our Public Works Centers. We will also be able to maximize our management initiatives, both for current PWC's and in examining the future potential for additional centers.

Along with the organizational review of the maintenance, transportation, energy, utilities, environmental and public works center functions, we have also studied our organization in support of the family housing program. We plan to retain an Assistant Commander for Family Housing, but there will be announced shortly some reorganizational actions aimed at further improving and strengthening our effectiveness and responsiveness in managing the Navy's family housing.

A related Headquarters change is the assignment of Code 09B as the Program Manager for the Public Works Program (Program IX). The Public Works Program Manager will use the three new Assistant Commanders as sub-program managers in the conduct of the Public Works Program. Program VIII, Housing, will remain assigned to the Assistant Commander for Housing.

All of the organizational changes at the Headquarters level are intended to bring about a revitalization of NAVFAC's technical role in all Navy public works matters. We can have only one primary goal in mind . . . improved facilities support of fleet operations and the shore establishment.

We intend to initiate an active (vice passive) technical role in providing maintenance policy and standards to Public Works Officers so they will know where they are going and how they stack up! Tied into this will be more attention by the detailers to insuring that both junior and senior officers obtain qualifying public works experience in order that sufficient of our leading officers will have the practical managerial experience necessary to be a successful Public Works Officer.

One of NAVFAC's other interfaces with fleet operations is in the military readiness category. In this issue of the NAVY CIVIL ENGINEER, you will find a myriad of information about our recent efforts to improve the readiness of the Seabee system to respond to military and contingency requirements. We have made giant strides during the last year in this area. We intend to continue along the same path in the months ahead.

As I look ahead, I am optimistic about the state of the Navy and our role in it. We continue to improve our effectiveness. The changes I have described in this discussion will help us to further increase our capabilities to support the fleet. I continue to be more impressed each day with the ability and potential of our civilian employees and military personnel, and by the professionalism and esprit de corps so amply evident in their work. It makes my job easy, rewarding and enjoyable. I extend my appreciation to each of you for your support.

Unfortunately, along with all of the good news, I also join with you in sorrow at the death of Admiral Ben Moreell, the founder of the Seabees and the only four-star admiral that we've ever had in the Civil Engineer Corps. It was always reassuring to have his sage advice available. I talked with him frequently, and as recently as two weeks before his death. His counsel will be missed. Admiral Moreell's death represents the passing of a significant and memorable phase of our history. I know that CEC officers, Seabees and NAVFAC employees join with his many friends around the world in extending our condolences to his family.

D. G. Iselin

DONALD G. ISELIN
Rear Admiral, CEC, USN
Commander,
Naval Facilities Engineering Command
and Chief of Civil Engineers

Seabee Scholarships

The Seabee Memorial Scholarship Association, initially formed to underwrite and construct the Seabee Memorial at Arlington National Cemetery (see pages 16-17), will soon conclude its 1978 fund drive to furnish college scholarships to eligible students. Any son or daughter of Regular, Reserve, Retired or deceased Navy officers or enlisted men who have or are serving with the Naval Construction Force (Seabees) or the Navy Civil Engineer Corps is eligible for scholarship consideration.

There are currently 20 active scholarships paying $500 annually to each recipient. The association seeks $200,000 during its present fund campaign to permit granting an additional 20 scholarships during forthcoming years. Contributions are tax deductible. It is further planned, dependent upon the success of the current campaign, to increase the annual amount of the individual monetary grant. A brochure outlining the entire scholarship program may be obtained from the association offices.

You are invited to participate in the association's endeavors and to become a regular contributor. Checks should be made payable to: Seabee Memorial Scholarship Association, Inc. The association is further interested in all persons who have or are serving with the Seabees for entry in the permanent Honor Roll of the Naval Construction Force which has contributed substantially to Navy and Nation since its establishment in 1942.

Seabee Memorial Scholarship Assn.
P.O. Box 19383
Washington, D.C. 20036

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